The Chemical Age

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NOTICES:—All communications relating to editorial matter should be addressed to the Editor, who will be pleased to consider articles or contributions dealing with modern chemical developments or suggestions bearing upon the advancement of the chemical industry in this country. Communications relating to advertisements or general matters should be addressed to the Manager.

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International Benzole Developments

THE growing recognition among producers of various commodities that international co-operation is preferable to price-cutting campaigns is exemplified by the news that the European benzole producers have decided to "get together." At the end of October an agreement was signed, at a meeting in Paris, which concerned arrangements between the benzole producers of Great Britain, Ireland, Germany, France, Belgium, Holland, Luxemburg and the Saar. According to a German account of the proceedings, a central bureau is to be established in Paris, and in December a meeting of the permanent bureau will be held in London, followed by a general meeting in Germany in June of 1930. The direction of the central bureau in Paris is to be in the hands of Mr. H. Laurin, president of the French Benzole Association. The objects of the new group will be the establishment of grades, propaganda for the use of benzole, and investigations on the improvement of benzole motor fuels. A uniform system of prices is also anticipated.

The benzole production of the various countries involved is given in the German statement as follows, for 1928:—Germany, 320,000 tons; Great Britain, 150,000 tons; France, 70,000 tons; the Saar, 35,000 tons; Belgium, 30,000 tons; and Holland, 25,000 tons. It is estimated that the increase over these figures for 1929 will be 12–15 per cent. for Germany, and an average of 8 per cent. for the other countries. Germany has a special interest in the question of international regulation, as she is a heavy importer of benzole. In 1928, German imports amounted to 163,000 tons, exports being 78,000 tons, the net imports being therefore 85,000 tons.

Berlin Power Conference

WHAT is known as the "Second Plenary World Power Conference," which will sit in Berlin next year from June 16 to June 25, will be chiefly occupied with the problems of the distribution and utilisation of power. The great fuel conference held in London in September and October of last year attempted a complete survey of the developments of the fuel industries throughout the world from those industries producing raw materials to those concerned with refining. The latest achievements in the preparation, distillation, carbonisation, and combustion of coal and peat, in the cracking and refining of oils, and in the production of gas, were dealt with by fuel experts from all parts of the world. Consumers of fuel of almost every class obtained valuable suggestions on fuel economy—in the new combined low temperature distillation and power plants in large and small industrial plants, for domestic purposes, and in transport.

The 1930 conference in Berlin will treat this group of problems from the point of view of the utilisation and distribution of fuels among their various possible uses. Specific questions to be dealt with will include the coal-mining industry as a basis for national gas supply, and the close connection between gas and its by-products both as regards production and disposal, particularly in respect of coke and the influence of turnover on the price level of gas and coke and on the cost of producing gas. Discussions are contemplated on the important technical and economic aspects of the distribution of gas, especially over long distances. On the subject of liquid fuels, papers are expected on the transport and distribution of oil, on oil mixtures and admixtures, on the selection of liquid fuels for petrol and heavy oil engines, on the latest technical and economic experiences with Diesel engines for transport purposes, on electricity works, etc. The Conference staff is at present collecting statistics from all parts of the world relating to the supply of power, and these will be available when the conference meets in June.

Berlin, which is becoming a centre for international gatherings of this kind, is preparing a hospitable welcome. On the Sunday preceding the opening day

there will be a reception in the Reichstag. The meetings of the conference will be in the State Opera House, and the conference offices at the Ingenieurhaus, the headquarters of the Verein Deutsche Ingenieure. Facilities are being arranged for visits to Central Germany, the Rhineland and Westphalia, Eastern Germany, Bavaria, and Baden, and for making the visit of a widely educational character. The conference will be presided over by Dr. Oskar von Miller, one of the pioneers of electrical supply, and founder of the German Museum.

In connection with this subject, acknowledgement may be made of the important issue for October of the *Journal of the Institute of Fuel*, which contains various articles on modern low-temperature carbonisation plants, on the latest applications of pulverised fuel for marine purposes, on gas producers for metallurgical purposes, coke oven gas utilisation in industry, heat insulation, and fuel utilisation in the ceramic industries.

A Great Chemical Publicist

By those who knew Dr. E. E. Slosson, of Washington, only by repute for his work in interpreting the services of science, and especially of chemistry, to the public of America, still more by those who had met him personally and had learned something of his striking character and qualities, the news of his death, which occurred at Washington on October 15, will be received with sincere regret. Dr. Slosson was a well-known figure at chemical gatherings in the United States; as a toastmaster, he ranked next to Professor Bogart, of New York. Members of the British party of last autumn will recall Dr. Slosson's humour at the dinner at the Cosmos Club at Washington, and the quaint tricks of speech and expression with which he could set any company rollicking with laughter. Born in 1865, Dr. Slosson graduated in the University of Kansas, and afterwards took charge of the chemical department of the University of Wyoming. He showed great aptitude for the exposition of scientific subjects, and in 1903 became literary editor of *The Independent*, which position he left in 1921 to become director of Science Service, an agency organised in the United States for the dissemination of popular knowledge on scientific subjects. This post he held with great success until his death. He wrote a number of books, which were very widely read, the best known being *Creative Chemistry*. He was one of the contributors to the new edition of the *Encyclopædia Britannica*.

Dead Sea Potash

Following upon the recent grant of a concession to develop the mineral resources of the Dead Sea, a company, under the title of Palestine Potash, Ltd., has just been registered as a public company. The nominal capital is £400,000, which may be regarded as a distinctly modest sum in view of the objects of the company, which are "to prospect, examine, explore and develop the natural mineral resources of the Dead Sea and the surrounding area, to win, refine, prepare for market and deal in mineral salts of all kinds, including potash and common and other salts, etc." This is to be divided into 230,000 7½ preference shares of £1 each, 150,000 shares of £1 each, which may be issued as preference or ordinary, and 400,000 ordinary shares of 1s. each. One of the conditions of the grant of the concession was that a majority of the directors must consist of persons who are British subjects or British and Palestinian subjects together. Of the nine directors, five possess these qualifications, namely the Earl of Lytton (presumably the chairman), Mr. S. W. D. Tennant, London (a director of C. Tennant, Sons and Co., Ltd.), the two concessionaires (Mr. M. Novomeysky, London, mining engineer, and Major T. G. Tulloch, Southsea, transport engineer), and Mr. David Lyell, London, civil engineer. The remaining four appear to represent American interests—Mr. Israel B. Brodie, International Finance Corporation (lawyer); Mr. B. Flexner, Palestine Economic Corporation (lawyer); Mr. F. M. Warburg, Palestine Economic Corporation (banker); and Mr. E. Friedman (manufacturer), all of New York. The solicitors are Messrs. Oppenheimer and Co., London. The proposition before the company is one involving immense chemical, engineering, transport and marketing problems, and its progress will be watched with considerable interest.

The Calendar

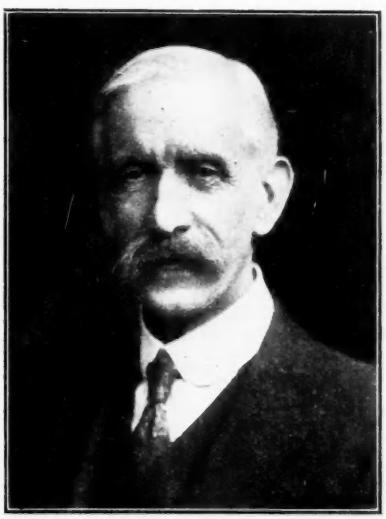
Nov.		
11	Institute of Metals (Scottish Section): "Some Difficulties in Aluminium Alloy Founding, and Some Remedies." George Mortimer. 7.30 p.m.	39, Elmbank Crescent, Glasgow.
11	Institute of Chemistry (Leeds Area Section): Annual General Meeting. "Fertilisers and Feeding Stuffs Act." H. Trefor Jones and J. S. Wilcox.	Great Northern Hotel, Leeds.
12	Institute of Metals (N.E. Coast Section): "Age-Hardening in Alloys." Robert Hay. 7.30 p.m.	Armstrong College, Newcastle-on-Tyne
12	Institution of Petroleum Technologists. 5.30 p.m.	House of the Royal Society of Arts, Adelphi, London.
13	Society of Chemical Industry (Newcastle Section): "Modern Boiler Practice." W. S. Coates. 7.30 p.m.	Armstrong College, Newcastle.
13	Institute of Metals (Swansea Section): "The Effect of Some Impurities in Copper." W. E. Prytherch. 7 p.m.	Thomas's Café, High Street, Swansea.
14	Oil and Colour Chemists' Association: "The Development of Printing Processes and Printing Ink." T. Hedley Barry. 7.30 p.m.	30, Russell Square, London.
14	Institute of Chemistry and Society of Chemical Industry (Edinburgh Sections): "Modern Developments in the Petroleum Industry." D. Stewart. 7.30 p.m.	36, York Place, Edinburgh.
15	Society of Dyers and Colourists (London Section): "Submerged Combustion." A. F. Hammond.	London.
15	Society of Chemical Industry (South Wales Section): "Some Recent Food Investigations." S. Dixon.	Cardiff.
15	National Smoke Abatement Society: "Smoke and Health." J. S. Taylor.	College of Technology, Manchester.
15	Chemical Engineering Group. Joint Meeting with the Nottingham Section, with visits to the University and to Manlove, Alliott and Co., Ltd. "The Scientific Heating of Liquids and Gases." J. Arthur Reavell.	Nottingham.
15	Society of Dyers and Colourists (Manchester Section): "Peter Griess." Dr. F. A. Mason. 7 p.m.	36, George Street, Manchester.

Sir Frederick Gowland Hopkins: Nobel Prizeman

An Appreciation

The Nobel Prize for Medicine and Physiology for 1929 has been divided between Professor Sir Frederick Gowland Hopkins, F.R.S., of Cambridge University, and Professor Christian Eijkman, of Utrecht University. In 1928 its value was £8,700. They were awarded the prize for their investigations into the nature of vitamins. Born in 1861, Sir F. Gowland Hopkins has been Sir William Dunn Professor of Biochemistry at Cambridge since 1921, having formerly held the chair of biochemistry in Cambridge from 1914 onwards. He is a Fellow of Trinity College; an original member of the Medical Research Council; and has been elected to membership of numerous foreign scientific societies and academies. He was elected a Fellow of the Royal Society in 1905, and has been awarded both the Royal Medal (1918) and the Copley Medal (1926) of the Society. He has held office as vice-president of the Chemical Society. His work has been widely recognised throughout the world, and is discussed briefly in the following article by a biochemist.

THE recent award of a Nobel Prize to Sir Frederick Gowland Hopkins, F.R.S., William Dunn Professor of Biochemistry in the University of Cambridge, has given universal satisfaction in scientific circles. Sir Frederick Gowland Hopkins was one of the pioneer workers in the application of chemistry to the study of the problems of living organisms, and is certainly the leader of biochemical thought in this country. He has a remarkable genius for recognising and disentangling the important chemical facts in a complicated biological system. The progress of his work has shown a consistent line of development extending over many years, and his most recent contribution to science, the successful isolation and investigation of glutathione, has completely revolutionised scientific thought on the chemical mechanisms of the living cell.



SIR F. GOWLAND HOPKINS, F.R.S.

It is, however, in special recognition of his pioneer work on the vitamins that Sir Frederick Gowland Hopkins has been honoured by the Nobel Trustees. Even at the period when he was a medical student, Hopkins was not satisfied with the current physiological doctrine that food materials for the animal organism could be classified as proteins, fats and carbohydrates, and that a diet complete in every respect could be formed by giving a supply of these materials in properly balanced ratio, provided that the calorific requirements of the animal were satisfied and that a supply of mineral salts and water was also given.

The Vitamins

Hopkins's intuitive vision of what is and what is not possible to the chemical mechanisms of the living body realised that such materials could not of themselves lead to the syntheses necessary either for maintenance of the body tissues or for growth. He recognised that other factors were essential for this purpose, and that these must be supplied in the food. With commendable caution, he described these merely as "accessory substances." They have now become known by the somewhat misleading name of "vitamins."

Hopkins's two pioneer papers on the accessory food factors in milk, published in *The Analyst* for 1906 and the *Journal of Physiology* for 1912, have been the starting point for an immense amount of research, which has led to the recognition of the two fat-soluble vitamins, now classified as A and D, the latter of which has been shown to be specifically connected with the typical disease of malnutrition in children—namely, rickets. From an early period in his career, Hopkins also emphasised the importance of the constitution of the food proteins in maintaining health in the adult or promoting growth in the young.

In 1901, in collaboration with Cole, he isolated tryptophane, and showed that the mammalian organism is unable to synthesise this important unit, and that a proper supply in the food is an essential for health. He also showed that cystine was an essential unit which the mammal cannot synthesise, and which has, therefore, to be supplied in the diet. Later he brought forward evidence that histidine is also essential in mammalian diet, and that its function in metabolism is as the precurser of purine synthesis, hence of nucleic acid and of all cell nuclei. The function of tryptophane has not yet been discovered, but the recognition of the existence and functions of glutathione in active cells now explains the need for cystine.

Glutathione

Hopkins's work on glutathione, an autoxidisable constituent of the cell, has appeared in a series of papers from 1921 onwards. It was known for many years before this that there was present in fresh tissues a substance containing an active sulph-hydryl group and giving a magenta colour reaction with sodium nitroprusside.

By means of a lengthy series of precipitations of tissue extracts involving the successive use as precipitants of lead acetate, uranium acetate in alkaline solution, and the acid mercuric sulphate reagent originally devised by him for the separation of tryptophane, Hopkins isolated the substance giving the nitroprusside reaction, and since it was found to contain glutaminic acid and a labile sulphur group, called it glutathione. Glutathione is present in all animal tissues except the connective tissues and the blood plasma. It can be detected in all proliferating vegetable tissue, in bacteria and in yeast. It is, in fact, characteristic of all tissues in an active state of metabolism. The whole of the non-protein organic sulphur of the cell appears to be present in this form. Hopkins at first considered it to be a dipeptide of glutaminic acid and cystine, but he has now proved it to be a tripeptide containing glutaminic acid, cystëine and glycine. It is thermostable, autoxidisable, and capable of existing either as the reduced form symbolised as G—SH, or as the oxidised double molecule G—S—S—G.

At the time when glutathione was isolated, a considerable amount of work on the oxidation of tissues had led to the belief, expressed among others by Bach, that in living cells there were autoxidisable constituents which formed oxidation-reduction systems in the cells. Glutathione has provided the first example of such an autoxidisable cell constituent. It passes readily from the reduced form G—SH to the oxidised form G—S—S—G in response to changes in its surrounding medium, such as for instance a change of *p*H value. Under suitable conditions, all of which exist in the cell, it can act either as a hydrogen donor or hydrogen acceptor.

An Oxidation Catalyst

Glutathione can by its presence induce (or catalyse) the oxidation of many other substances, methylene blue being oxidised anærobically in its presence. Fats and proteins are also oxidised through its influence. The oxidation of the latter occurs at the —SH group of the protein, and is dependent on a continuous regeneration of this group—a process which appears to occur only in the presence of the reduced form of glutathione. The oxidation-reduction system of glutathione is due to the labile —SH group of its cystëine-moiety, and the biological significance of the existence of the tripeptide seems to be that in this way cystëine is protected from metabolic breakdown.

Hopkins's work on the constitution, properties and functions

of glutathione is a direct continuation of his previous work on the individual amino acids and their significance to the organism. His early work showed that, for the proper metabolism of the mammalian body, the right chemical units must be supplied to it. His latest work is showing the function of these units in the chemical mechanisms of the body. His personal contributions to the advancement of knowledge have been given the recognition due to their intrinsic merit. His scientific prestige has attracted to his laboratory in Cambridge a school of pupils drawn not only from the British Isles, but from the whole world. Not the least of his contributions to science is the enthusiasm with which he inspires his colleagues and pupils, many of whom are now building on the foundation which he has laid.

Industrial Research

An Address by Dr. F. A. Freeth, F.R.S.

At the annual joint meeting of the Society of Chemical Industry, the Institute of Chemistry, the Society of Dyers and Colourists (Manchester Section) and the Manchester Literary and Philosophical Society, in Manchester, on Friday, November 1, Dr. F. A. Freeth, F.R.S., joint research manager to Imperial Chemical Industries, gave an address on "Industrial Research."

With certain well-known exceptions, said Dr. Freeth, industrial research in Britain did not receive much serious attention until the close of the war. The average age of research departments either belonging to the State or to private companies was certainly less than twenty-five years. Therefore they were really dealing with a movement that was in its infancy.

Leading Position of the Chemical Industry

Dr. Freeth laid the main stress upon the spirit in which research was conducted. In a way, he was a representative of one of the greatest research-employing industries of the country, but it was hardly fair at the moment to compare the condition of research in the chemical industry with that of any others. The chemical industry during the last ten years had undergone the greatest expansion in its history and one which was by no means yet completed. This expansion had necessitated the prosecution of research upon an enormous scale, and it was certain that without such continuous large-scale research no progress would have been possible.

He proposed, therefore, to deal with the question of research not as confined to the chemical industry but as applicable to the general industries of the country as a whole. Industrial research had not too good a start as regards the mutual relationships of the parties concerned. The manufacturer was after all one of the principal parties concerned, since it was he who had to pay for it. Manufacturers in this country had had a most anxious and uneasy time during the past seven or eight years, and there had been far too much general condemnation of the manufacturer's attitude to research. The word backward was constantly used. The approach to the manufacturer had not been correctly made. He had been urged to prosecute research merely on a paying basis, but there was a great necessity for an almost paradoxical frame of mind in this connection.

The Practical Men

The second and very important party was the technical staff. The technical staff of an old-established industry would nearly always be what were known as practical men, and their attitude of mind, without being hostile to research or to the scientific worker, was apt to be acutely critical, often for very good reasons.

The research worker had advanced upon industry in the style of Joshua blowing his trumpet, with the negative effect that the walls had not fallen over. Moreover, the imposition of the cost of research upon the cost of manufacture was nearly always one which was to some extent resented by technical men of affairs. Dr. Freeth's point was that a great many of these difficulties could be overcome by a spirit of enthusiasm in intelligent scientific work. It must always be remembered that if they could convince the manager of a works that he had at his call a body of research workers who were actively and energetically investigating the inmost theories of their subject, they could very often command results which would convert him from a sceptic into an enthusiast.

Mental Outlook of the Research Worker

As regards the research worker himself, in some cases the scientific man had approached the problems of industry in an altogether too light-hearted spirit. One of the most important things in industrial research was the attitude of mind of the research worker.

Dr. Freeth then considered the position of any industry which up to the present had had very little assistance from research or had been averse from spending money on research on the grounds of financial stringency. First it should be stated, however, that there was strong logical reason against doing research by trades, and that it was probable that at some time in the future, research would not be effected by trades but by the various sections of science into which all the trades concerned fitted. It might well happen that certain trades had very little to gain by research, not sufficient to justify the founding of an adequate research department, because it was impossible to overstress the truth that if research was inadequate it had far better not be undertaken at all. Results would be generally disappointing, and, what was worse, a half-hearted spirit would prevail.

Returning to the industry which was about to undertake research, he would assume that there were reasonable grounds for hope of improvement. That brought them to the crux. Research in an industry of such a character—it must be remembered that by far the greater part of the industries of the country came into this category—must be on the lines of finding out more about it and especially about the scientific mechanism of its processes, rather than an attack on particular difficulties.

Co-operation

That conception demanded the utmost open-mindedness, sympathy and co-operation between the manufacturer on the one hand and his technical staff and his research workers on the other. That could best be appreciated by looking into that most important question, *e.g.*, the condition of the minds of those actually engaged in doing research. Nearly every scientist or scientific worker had in his inmost heart a tremendous respect for the purely scientific and academic sides of his profession. It was also in that sense a regrettable fact that in many cases academic science did not always accord quite that amount of admiration and understanding to industrial science which was necessary in order for it to maintain its self-respect.

When they examined the various statements made by great scientists, and the facts of the conditions under which they worked, they found that independence of work and thought was the characteristic upon which they would most insist. If the research workers were always worried as to the production of what were called results, then that free play of mind which was so essential for the very difficult task of achieving the further development of an old-established industry would inevitably be destroyed.

The Key to Success

He seriously suggested that the key to successful industrial research would be found in the development of the individual scientific enthusiasm of the research worker. There was all the difference in the world between a man who was filled with a kind of glorious obsession in his work and a man who was merely doing work in order to obtain a living. In many cases the conditions of an industry were such that it was nearly impossible for them to pay their scientific workers really adequately even if they cared to do so. He did not propose to elaborate that question, but he wished to impress upon them that a man must have some driving force behind him if he was to do good work. Monetary success was a tremendous incentive, but if this was impossible, there was only one other thing possible, and that was the stimulation of enthusiasm among their scientific workers by every means in their power.

The research worker, like all of them, was subject to various cross currents of thought. A new phenomenon was arising; people were taking up industrial research as a means of livelihood. People were constantly asking him whether they should

make their sons physicists, chemists or engineers, the answer being supposed to be predetermined by that profession in which he had the biggest chance of making a large income.

The Training of the Investigator

Claud Bernard, the famous French physiologist, emphasised, in a striking passage, the necessity of performing experiments without pre-conceived ideas. Many men whose whole lives and reputations had been connected with pure science had failed in this respect. How much more difficult was it, therefore, for the industrial research worker? Consider an average case of the training and environment of such a man. Nearly always he had been to a university, where in order to obtain a good degree it was necessary for him to cram like the proverbial Strasbourg goose. He next settled down for one or two years of research in the university of which he was already a member, though Dr. Freeth considered that there was nothing more admirable for a man who had gained his degree at a university than to do his research somewhere else. During the two years' research the young man was at the mercy of another cross current. Usually the research which he undertook had not been suggested by himself, but was part of a general scheme worked out by the professor to whom he was responsible. The latter was under a kind of moral obligation to suggest a theme which would, as they said, come out, that was to say, which would yield some sort of result. That obviously meant that very many of the interesting and more difficult ideas of science were neglected.

Another cross current was provided by changes of fashion, for they must remember that science ran in fashions. At the moment, what might be called the fashionable theoretical trend was not particularly of immediate advantage to industry. He was not attempting to decry in the slightest the magnificent achievements of modern theoretical science; nevertheless, a great deal of modern chemistry and physics was remote from what they might call practical life.

All that might sound a little depressing, but in fact it was not so. He had outlined the chief dangers merely to prove that if they were recognised they were the more easily overcome. Here were a few random suggestions. Research workers ought to travel and consult with other people a great deal more than they did at present, if only to prevent the almost endemic disease of mental staleness. The travelling accounts of many research associations were ludicrously small. A great deal could also be done by close association of trades which had nothing to fear from each other. Of course, there had been in this country a kind of what might be called jealousy in the past, for instance of the necessity for secrecy. There were at this moment many research departments in different trades which could exchange complete information and mutual visits of staffs to the greatest good of everybody. It was also of the greatest value to stimulate and encourage friendly international relationships between scientific workers. Such exchange (and he had had a good deal of experience of it) was nearly always mutual, and its effect on industrial scientific workers was of the very greatest good.

Institution of Chemical Engineers

President's Reception

THE esteem in which the youthful and energetic Institution of Chemical Engineers is generally held was well reflected in the gathering which attended the annual President's Reception held on Wednesday evening at the New Princes' Galleries, London. Nearly five hundred guests were received by the President, Mr. J. Arthur Reavell, and Mrs. Reavell.

The function took place, as usual, in the rooms of the Royal Institute of Oil Painters at the galleries, and those attending were able to inspect the exhibition of oil paintings now on view. An excellent programme of entertainment was provided by Miss Hilda Bertram, Mr. Herbert J. Collings (whose magic feats aroused the keen professional interest of the engineers), and Mr. Barrington Hooper.

The Guests

Among those who accepted invitations to attend were the following:—

The Marquis of Reading, Lord and Lady Bledisloe, Lord Meston, The Hon. Sir Charles Parsons, Cmdr. the Hon. J. M. Kenworthy, M.P., and Mrs. Kenworthy, Sir Tudor Walters, M.P., and Lady Walters, The Hon. Hugh and Mrs. Fletcher Moulton, Rear-Admiral Sir Douglas Brownrigg, Sir Ernest Moir, Sir Ellis Hume-Williams, Sir Hugo and Lady Hirst, Sir Frank and Lady Heath, Sir Arthur Duckham, Sir Donald MacAlister, Sir Frederick and Lady Black, Lt.-Gen. Sir William Furse, Sir Robert Elliott-Cooper, Sir Vincent Baddiley, Sir Newton Moore, M.P., and Lady Moore, Sir Henry Maybury, Sir Robert and Lady Robertson, Sir Campbell Stuart, Sir Harry and Lady Brittain, Sir Frederic and Lady Nathan, Sir Clement Kinloch-Cooke, Sir Douglas Newton, M.P., Sir Arthur Mayo-Robson, Sir Robert and Lady Waley Cohen, Sir Charles and Lady Sanders, Sir John Flett, Sir William McCormick, Sir David Prain, Sir Gregory Foster, Sir Park Goff, Col. Sir William and Lady Smith, Lt.-Col. Sir William Wayland, M.P., Sir James and Lady Henderson, Sir John Ganzoni, M.P., Sir Samuel and Lady Instone, Sir Alfred and Lady Mays-Smith, Sir John Russell, Sir Benjamin and Lady Longbottom, Prof. Sir John Farmer, Sir Andrew Taylor, Sir Walter and Lady Greaves-Lord, Sir Albert Kitson, Sir Leopold Savile, Lady Lockyer, The Mayor of Bethnal Green, The Mayor and Mayoress of Camberwell, The Mayor and Mayoress of Finsbury, The Mayor of Fulham, The Mayor and Mayoress of Islington, The Mayor and Mayoress of Kensington, The Mayor of Paddington, The Mayor and Mayoress of St. Pancras, The Mayor and Mayoress of Southwark, The Mayor and Mayoress of Stepney, The Mayor and Mayoress of Westminster, The Mayor and Mayoress of Woolwich.

Mr. C. G. Ammon, M.P., Dr. J. S. Anderson, Mr. N. A. Anfilogoff, Prof. H. E. Armstrong and Miss Armstrong, Mr. Wm. Arnold, Mr. Cyril Atkinson, M.P., Miss W. Baker, Mr. and Mrs. Horatio Ballantyne, Mr. T. Hedley Barry, Mr. and Mrs. F. Bascombe, Rear-Admiral T. P. H. Beamish, M.P., Mr. H. Beaver, Mr. and Mrs. W. M. Beckett, Mr. W. Bennett, M.P., Mr. and Mrs. W. H. Bennett, Cmdr. and Mrs. L. C. Bernacchi, Mr. J. Bernard, Mr. A. Bevan, M.P., Mr. W. H. Bird, Mr. J. H. Blake, Mr. Rustat Blake, Mr. and Mrs. E. R. Bolton, Mr. A. L. Booth, Mr. C. McC. Bottomley, Major A. N. Braithwaite, M.P. and Mrs. Braithwaite, Prof. and Mrs. J. S. S. Brame, Mr. D. A. Bremner, Mr. and Mrs. F. W. Bridges, Mr. S. E. Britton, Mr. and Mrs. C. B. Brodigan, Mr. J. J. A. Brooks, Lt.-Col. S. W. Bunker, Dr. H. J. Bush, Mr. W. J. A. Butterfield and Miss Butterfield, Mr. J. W. Campbell, Dr. and Mrs. F. H. Carr, Mr. S. E. Carr, Mr. Ashley Carter, Wing Cmdr. and Mrs. T. R. Cave-Browne-Cave, Brig.-General and Mrs. J. Charteris, Mr. and Mrs. A. E. Chattin, Mr. Leuig Chew and Dame Nadya Chew, Major A. G. Church, M.P., Col. J. Sealy Clarke, Mr. F. W. Clifford, Mr. W. H. Coleman, Mr. W. V. Coles, Mr. R. L. Collett, Dr. H. G. Colman, Mr. J. Compton, M.P., Prof. G. Cook, Mr. and Mrs. A. R. Cooper, Mr. and Mrs. A. J. C. Cosbie, Dr. H. E. Cox, Mr. and Mrs. W. F. V. Cox, Mr. and Mrs. H. W. Cremer, Mr. R. P. Croom-Johnson, M.P. and Mrs. Croom-Johnson, Col. R. E. B. Crompton, Mr. P. B. Crossley, Dr. and Mrs. W. Cullen, Mr. M. D. Curwen.

Mr. G. W. Daniels, Mr. Wilfred Darke, Prof. C. R. Darling, Col. A. E. Davidson, Mr. Clement Davies, M.P., Mr. S. B. Donkin, Prof. F. G. Donnan and Miss Donnan, Mr. C. O. G. Douie, Mr. A. A. Drummond, Dr. H. W. Dudley, Rev. H. Dunnico, M.P., and Mrs. Dunnico, Mr. A. H. Dykes, Dr. and Mrs. W. H. Eccles, Mr. and Mrs. F. G. Edmed, Mr. K. L. Emler, Mr. and Mrs. F. Esling, Mr. D. Owen Evans, Mr. Edgar C. Evans, Mr. E. V. Evans, Dr. J. Vargas Eyre, Mr. F. C. Fairholme, Mr. and Mrs. John Ferguson, Mr. H. E. Field, Prof. and Mrs. G. I. Finch, Mr. and Mrs. T. Campbell Finlayson, Mr. A. S. Fitzpatrick, Mr. G. H. Ford, Mr. and Mrs. G. W. Fowle, Prof. and Mrs. A. Fowler, Mr. Peter Freeman, M.P., Mr. and Mrs. John Fry, Mr. B. Fullman (THE CHEMICAL AGE), Mr. T. H. Gant, Mr. and Mrs. P. C. Gardiner Mr. J. A. Gardner, Mr. and Mrs. C. S. Garland, Prof. and Mrs. W. E. Gibbs, Mr. H. A. Gill, Mr. and Mrs. R. J. Glinn, Dr. J. N. Goldsmith, Mr. and Mrs. C. J. Goodwin, Mr. F. Goodwin, Mr. and Mrs. H. A. S. Gothard, Mr. W. D. Graddon, Dr. E. Graham Little, M.P., Major D. Graham Pole, M.P., Mr. George Gray, Mr. and Mrs. F. A. Greene, Mr. E. G. Greener, Mr. W. W. Grierson, Mr. and Mrs. F. W. Grose, Mr. J. W. Grose.

Dr. P. Haas, Mr. T. G. N. Haldane, Principal W. R. Halliday, Mr. W. H. Halls, Mr. F. E. Hamer, Mr. W. C. Hancock and Miss Hancock, Prof. D. Harrison, Mr. F. W. Harbord, Mr. S. Harcombe, Mr. N. Hardie, Rev. and Mrs. J. C. Harris, Eng. Capt. J. Hope Harrison, Dr. and Mrs. W. H. Hatfield, Mr. and Mrs. A. Hawkyard, Mr. and Mrs. W. Hawkyard, Mr. and Mrs. H. Hayhurst, Mr. B. Heastie, Mr. N. Heaton, Lt.-Col. A. P. Heneage, M.P., and Mrs. Heneage, Major E. O. Henrici, Dr. and Mrs. T. A. Henry, Mr. T. E. Herbert, Mr. J. S. Highfield, Prof. and Mrs. J. W. Hinchley, Mr. H. Lloyd Hind, Mr. P. J. Hinks, Prof. F. T. G. Hobday, Principal A. F. Hogg, Mr. N. Holden, Prof. Bernard W. Holman, Mr. and Mrs. S. Hopkins, Mr. T. J. Horgan, Mr. and Mrs. G. F. Troup Horne, Mr. A. L. Howard, Dr. Joseph Hunter, M.P. and Mrs. Hunter,

Mr. Percy Hurd, M.P. and Mrs. Hurd, Mr. G. D. Hutchins, Dr. R. S. Hutton, Mr. J. Inglis, Mr. and Mrs. W. B. Jackson, Mr. F. C. Jennings, Mr. and Mrs. W. Johnson, Mr. and Mrs. E. W. Johnston, Mr. F. Llewellyn Jones, M.P., Mr. T. W. Jones.

Dr. G. W. C. Kaye, Dr. B. A. Keen, Mr. W. T. Kelly, M.P., Dr. and Mrs. H. King, Dr. J. G. King, Mr. W. T. Kipps, Mr. J. W. Kirkby, Mr. Holford Knight, M.P. and Mrs. Holford Knight, Mr. and Mrs. W. S. Knight, Mr. S. J. Kohli, Mr. A. Laing, Prof. E. H. Lamb, Dr. and Mrs. L. H. Lampitt, Dr. C. H. Lander, Mr. J. R. Lane, Mr. H. Langwell, Miss Susan Lawrence, M.P., Dr. G. Lawton and Miss Booers, Mr. and Mrs. John Lea, Mr. L. F. W. Leese, Dr. H. Levinstein, Mr. and Mrs. E. I. Lewis, Mr. and Mrs. F. H. Livens, Mr. I. P. Llewellyn, Mr. Cyril Lloyd, Mr. and Mrs. W. Stanley Lonsdale, Prof. and Mrs. Henry Louis, Mr. and Mrs. S. McEwen, Mr. and Mrs. James MacGregor, Dr. I. Smedley Maclean, Mr. and Mrs. B. G. McLellan, Mr. W. Macnab, Mr. and Mrs. S. J. Madden, Capt. A. D. Makins, Mr. Cecil Malone, M.P. and Mrs. Malone, Mr. and Mrs. G. S. W. Marlow, Mr. H. F. Marriott, Mr. H. Marryat, Prof. L. C. Martin, Mr. and Mrs. W. C. Mason, Mr. and Mrs. J. Maughfling, Dr. P. May, Mr. C. M. Mayson, Prof. and Mrs. W. H. Merrett, Mr. E. D. Metcalfe, Dr. and Mrs. S. Miall, Dr. H. H. Mills, Dr. G. W. Monier-Williams, Dr. and Mrs. G. T. Moody, Col. R. K. Morcom, Mr. H. M. Morgans and Miss Morgans, Mr. W. S. Morrison, M.P., and Mrs. Morrison, Mr. J. C. Moulden, Mr. and Mrs. A. E. Munby, Major H. L. Nathan, M.P. and Mrs. Nathan, Mr. M. L. Nathan, Mr. and Mrs. L. O. Newton, Mr. P. B. Nicholson, Mr. and Mrs. E. W. L. Nicol, Mr. D. Northall-Laurie, Prof. T. H. Norton, Lt.-Col. W. A. J. O'Meara, Mr. and Mrs. W. A. H. Oswald.

Prof. S. G. Paine, Mr. and Mrs. A. F. Palmer-Phillips, Dr. and Mrs. A. Parker, Mr. P. Parrish, Mr. J. D. Parsons, Principal and Mrs. G. Patchin, Mr. and Mrs. A. Peake-Jones, Mr. W. Pellew-Harvey, Mr. S. F. Perry, M.P., Prof. J. C. Philip, Mr. T. B. Philip and Miss Hemmings, Major C. E. S. Phillips, Dr. and Mrs. R. H. Pickard, Mr. and Mrs. R. B. Pilcher, Mr. and Mrs. H. J. Pooley, Mr. P. C. Pope, Mr. and Mrs. W. King Porteous, Mr. and Mrs. F. M. Potter, Mr. J. Davidson Pratt, Mr. and Mrs. R. L. Quertier, Mr. and Mrs. L. G. Radcliffe, Mr. H. Ramsbotham, M.P., Mr. C. K. Rayner, Mr. and Mrs. Eric Reavell, Mr. and Mrs. E. R. Redgrove, Mr. Alexander Reid, Mr. R. V. Reid, Mr. H. T. F. Rhodes, Mr. H. T. Rice, Prof. K. Rice-Oxley and Miss Rice-Oxley, Mr. and Mrs. L. H. Riddell, Mr. H. M. Ridge, Mr. S. P. Roach, Mr. and Mrs. B. A. Robinson, Mr. and Mrs. F. Heron Rogers, Mr. R. C. Rogers, Mr. T. Roles, Mr. J. F. Ronca, Dr. W. Rosenhain, Major Ronald Ross, M.P. and Mrs. Ross, Mr. A. West Russell, M.P. and Mrs. West Russell, Mr. W. Russell, Cmdr. R. St. John.

Mr. C. W. Salmon, Mr. C. W. Salt, Mr. Servington Savery, M.P. and Mrs. Holliday, Dr. H. Schofield, Mr. J. Scott, M.P. and Mrs. Scott, Mr. G. Sell, Mr. E. Sharp, Eng.-Capt. J. Fraser Shaw, Mr. J. F. Shillaker, M.P., and Mrs. Shillaker, Prof. and Mrs. J. L. Simonsen, Eng.-Vice-Admiral and Mrs. R. W. Skelton, Mr. and Mrs. J. F. Smellie, Dr. and Mrs. E. W. Smith, Mr. Roger Smith, Dr. S. W. Smith, Mr. D. G. Somerville, M.P., and Mrs. Somerville, Dr. G. Spero, M.P., Mr. H. M. Spiers, Mr. C. W. Stancliffe, Mr. and Mrs R. F. Stewart, Mr. and Mrs. W. J. Stewart, Cmdr. R. E. Stokes-Rees, Mr. and Mrs. E. Halford Strange, Mr. and Mrs. N. Swindin, Mr. C. W. J. Taffs, Mr. P. W. Tainsh, Mr. and Mrs. H. Talbot, Mr. F. Taylor, Mr. H. E. Temple, Dr. F. B. Thole, Mr. A. Beeby Thompson, Mrs. J. F. Thorpe, Mr. Ben Tillett, M.P., Mr. H. T. Tizard, Prof. and Mrs. S. J. Truscott, Mr. and Mrs. H. A. Tunstall, Mr. and Mrs. Stanley Udale, Mr. and Mrs. S. G. M. Ure, Dr. L. Veillon, Mr. an Mrs. R. J. Venn, Mr. J. L. F. Vogel and Miss Vogel, Mr. E. Wallis, Mr. Comerford Watson and Miss Mason, Mr. and Mrs. J. D. Watson, Lt.-Col. H. W. Watts, Mr. A. Webster, Mr. T. Westthorp, Mr. and Mrs. F. W. White, Mr. and Mrs. J. C. White, Prof. M. A. Whiteley, Mr. J. Arthur Williams, Mr. G. H. A. Wilson, M.P., Mr. and Mrs. M. F. G. Wilson, Mr. W. H. Woodcock, Mr. C. B. Woodley, Mr. and Mrs. W. B. Worthington, Mr. H. Wright and Miss Wright.

Concentration in German Potash Industry

THE Diet of Anhalt recently approved a contract leasing to the Preussag (Preussische Bergwerke und Huetten Aktiengesellschaft) potash concern rights to mine and operate potash property of the Anhalt concern at Stassfurth-Leopoldshall until 1953. This latest potash fusion further concentrates potash production within the jurisdiction of the few, and leaves but six potash concerns now operating in Germany, namely: Wintershall Aktiengesellschaft, Salzdetfurth Konzern, Burbach Kaliwerke, Preussag, Kali-Chemie Aktiengesellschaft, and Deutsche Solvay-Werke. The leasing of Anhaltische Salzwerke to Preussag was preceded by a bid on the property by Kali-Chemie Aktiengesellschaft. Kali-Chemie's offer was actuated by threatening competition by Preussag in production of potassium carbonate, a commodity on which Kali-Chemie and the I.G. have heretofore had a virtual monopoly.

Annual Meeting of Coke Oven Managers

Mr. Ben Turner's Speech

THE annual meeting of the Coke Oven Managers' Association was held on Thursday, October 31, at the Hotel Great Central, London. In the absence, owing to illness, of the new president, Mr. A. H. Middleton, Mr. G. A. Hebden took the chair.

In the evening the Association held its annual dinner. The guests included Mr. Ben Turner, Secretary for Mines, Dr. Herbert Levinstein (president of the Society of Chemical Industry), Sir David Milne-Watson (president of the Institute of Fuel), Mr. C. H. Lander (Director of Fuel Research), Professor Henry Louis (president of the Iron and Steel Institute), Professor H. V. A. Briscoe, and others. Mr. G. Chrisp presided.

Mr. Ben Turner, in proposing the toast of "The Association," said that there should be an assured peace in the coalfields, because the position of by-products in this country had become unsatisfactory. As regards the development of the coke oven industry, the scientists were still on the doorstep of investigation. The utilisation of coke oven gas had set again on its feet the gas undertaking of one of the towns he represented in the House of Commons.

He believed that an industry like theirs, with proved success in the coke oven plants and experimental success in low temperature carbonisation, needed the pooled wisdom of all engaged in the coal industry.

By-Products

The chairman, in responding to the toast, dealt with the unsatisfactory position of the by-products. Coal strikes had retarded the development of coke oven industry. It was admitted, he said, that the coking plants of this country, speaking generally, were seriously out of date and expensive to operate in competition with foreign plants. Thus coke was more costly, and the higher cost was passed on to pig-iron, steel and finished products in ever-increasing percentages.

But why was it that this state of affairs existed? Simply because without an assurance of a long period of industrial peace, the owners could not afford to erect new plants which were liable to be ruined through stoppages. A coal strike had a most devastating effect upon coke oven batteries and blast furnaces, and owners naturally hesitated to embark upon expenditure with stoppages continually threatening the outlay.

Mr. Chrisp then went on to emphasise the desirability of an assured peace in the coalfields, because of the position of the by-products.

Owing to the effect of the production of the synthetic material, the chief by-product, sulphate of ammonia, was realising only about half the price it commanded a few years ago, and though benzol, assisted by the tax on imported motor spirit, had possibly attained some popularity—and would possibly become still more popular if designers of carburettors would study its composition and so get better combustion—British tar was not getting a fair chance with foreign bitumen, and the demand for creosote oil from America, once our largest customer, now producing for her own requirements, had fallen, particularly since steel sleepers started to come into favour.

He suggested to the Minister that the Government should inquire into the claim for British tar that it should be used as a binder for all the new roads in the Government's big programme, which would have the effect of helping the by-product industry considerably.

Mr. William Green (Wath-on-Dearne) suggested that the depreciation in by-product market values brought with it the alternative of finding new markets or producing new products.

Fixed Nitrogen Patent Action in Germany

THE Gerwerkschaft Victor, at Castrop, operating a Claude ammonia synthesis after a Bronn-Concordia-Linde coke-oven gas separation, has lost, in the first instance, the suit brought against it by the Concordia Bergbau Gesellschaft, Oberhausen, for alleged violation of the patent protecting the coke-oven gas separation by liquefaction and subsequent fractional distillation. The Gewerkschaft Victor has appealed, and the case is to go to an upper court. The company has not yet suspended operation of its ammonia synthesis plant at Rauxel.

The Development of Titanium Oxide Pigments

A Survey by Mr. Noel Heaton

The monthly meeting of the London Section of the Society of Chemical Industry was held in the rooms of the Chemical Society, Burlington House, London, on Monday, Professor G. T. Morgan (chairman of the Section) presiding. The papers read are discussed below.

In a paper on "Titanium Oxide Pigments," Mr. Noel Heaton gave a brief survey of the history of the development of these pigments. Every chemist, he said, was familiar with the rather paradoxical position occupied by titanium. It had always been listed as one of the rare earths, when, as a matter of fact, it was one of the most plentiful elements. Titanium compounds had been used for various purposes, such as for pigments, in metallurgy, in dye-analysis, and in a number of other directions, but many of the uses were of an academic rather than of a practical nature.

Occurrence

Titanium ores were originally discovered in Cornwall, but there were no large deposits in this country, and supplies were found in Europe, the United States, Australia and elsewhere. Continual efforts had been made to turn the enormous deposits of titanium to account, the first serious attempts being made in Norway, but a company which was formed in 1860 for this purpose went into liquidation in 1869. The Norwegian mines then came into the possession of J. W. Rylands, a Birmingham varnish maker, who was the first to make use of titanium for the purpose of paint pigment; it was found to have a much better covering power than the white pigments commonly used. Work was also done in America in the same connection, and an anti-fouling composition was made, using titanium oxide as the pigment.

In 1908, the Norwegian Government carried out extensive researches with the object of extracting titanium from titanium ore, and to find a use for the titanium in bulk. As a result, a titanium oxide was extracted (by means of concentrated sulphuric acid), which was found to have great obliterating power. Mr. Noel Heaton expressed the view that there were great possibilities of producing coloured pigments by combining titanium oxide with zinc oxide or cobalt oxide, although at present this was a suggestion of perhaps academic interest.

White Lead in Paint

The great stimulus to the production of titanium white as a pigment, said Mr. Heaton, really came in 1910, when the great controversy as to the prohibition of white lead in paint took place. This set people to work to find a white pigment which did not have the risks of white lead, and ilmenite, or titanium ore, was regarded as the obvious source. At first the cost of production was against its commercial development, but as the output grew the price fell. Eventually, those who were working at the subject in America and in Europe came together and decided to pool their resources, and since then the standard method of extracting titanium oxide from the ore had been by sulphuric acid.

It took a great deal of arduous research, however, for the laboratory method to be translated to a full-scale works process, which was carried out by decomposing the ore directly by sulphuric acid.

Three Classes of Oxide Available

There were three classes of titanium oxide available. The first was pure titanium oxide, used to a small extent as a reagent; the second was what was known as the technical grade, which contained about 94 per cent. of titanium oxide; and, finally, there was the pigment grade, which contained 98 per cent. of titanium oxide. The industrial development had proceeded along the line of combining titanium oxide with barium sulphate in order to obtain the greatest opacity, and the most efficient combination was obtained by using the two substances in equimolecular proportions. For some purposes, however, it was an advantage to have a higher proportion of titanium oxide, *e.g.*, 65 to 70 per cent.

Reference was made to the differences of opinion as to what took place, in relation to the structure of the resulting material, by the combination of the titanium oxide and the barium sulphate, but, said Mr. Heaton, whatever might be the doubts as to the structure there was no doubt about the mechanical results. All titanium pigments had very much better covering power than other substances. Attention was also called by Mr. Heaton to the chemical stability of titanium oxide pigments, and the absence of any danger such as that associated with white lead. In order to demonstrate the latter point, Mr. Noel Heaton mentioned that he had eaten one pound of titanium white mixed with a little glucose, and he showed X-ray photographs of his stomach before and after he had eaten this. Incidentally, the X-ray photographs were really taken in connection with ill-health arising out of the war, which had puzzled medical men for several years, and the interesting fact was brought out that not only did the pound of titanium white do no harm to Mr. Heaton, but the complaint disappeared at the same time, and had not recurred.

A Combination of Producers

The European and American producers had combined, and had recently put into operation a large factory at Leverkusen on the Rhine, where the ore was transported, this being done because supplies of sulphuric acid were there available.

In conclusion, Mr. Heaton said he did not put forward titanium oxide as a substitute for, or to the deteriment of, any other pigment material, nor did he wish to make any invidious comparisons. He merely intended to indicate the properties of the material and the manner of manufacturing it, at the same time admitting that he was an enthusiast for titanium white because it had specific properties which rendered it extremely useful for certain purposes. He did not suggest it was an absolutely ideal material under all possible conditions. It had limitations, and it presented difficulties in use. Indeed, titanium white as a pigment was still in its infancy, and there were many problems connected with its use in many industries which had yet to be solved.

Replying to some remarks made in the discussion on the paper, Mr. Heaton said that he did not consider that titanium white alone was equal to white lead for outside painting work, but if it were used with a proper vehicle a durable outside paint could be obtained. At the same time, the more experience he had the more he was convinced that the best results would be obtained by a combination of pigments. That seemed to him the proper way to solve the problem of durability. He did not believe in one pigment; the best results would be obtained by the scientific combination of two or even three pigments, as by this means it was possible to make use of the strong points in each pigment, and to eliminate or modify the weak points.

Other Papers

Mr. Arthur Marshall presented two papers. The first was "The Vapour Pressures of Nitroglycerine and Dinitroethylene Glycol" in which a series of experiments were discussed, as the result of which the author had drawn up a diagram showing the most probable values for nitroglycerine and dinitroethylene glycol at various temperatures. In his second paper, Mr. Marshall dealt with "The Function of Sulphuric Acid in Nitrations," and drew the conclusion that the most important function of sulphuric acid in nitration processes was to act as a negative catalyst of oxidation.

Chemical Engineers and Paper-Making

A visit to the works of the British Vegetable Parchment Mills will be made by members of the Institution of Chemical Engineers on Wednesday, November 27. On the evening of the same day the Institution will hold a meeting (postponed from November 13) in the Rooms of the Chemical Society, Burlington House, Piccadilly, London, W.1. The chair will be taken by the president, Mr. J. Arthur Reavell, at 8 p.m., and a paper on "Production and Treatment of Cellulose in the Paper Industry" will be read by Mr. James Strachan. Mr. Strachan has been associated with the paper industry for many years, and his paper embodies the latest information resulting from his wide experience.

"The New Despotism," by Lord Hewart

By Sir Ernest Benn

THE business world will desire to add its quota to the thanks now being showered upon the Lord Chief Justice for the service which he has rendered in raising the fundamental issues dealt with in "The New Despotism." Whether or not Lord Hewart will succeed in getting politics back to fundamentals remains to be seen, for it is one of the melancholy facts of the extraordinary age in which we live that politics and public affairs concern themselves almost entirely with trumpery detail and temporary interests, to the exclusion of those great questions of principle and right which our grandfathers seemed to be more capable of understanding. All the fervour of citizenship which induced the Americans to engage in civil war over the right to secession, or the English to divide themselves into bitterly hostile camps on slavery or franchise or Church disestablishment, now seems able to content itself with such trivialities as a half hour's work in a mine, or a two and a half per cent. to a railway servant.

Lord Hewart, ignoring all the detail of the moment, raises from his high position an issue which affects the future of democracy itself. For some two years past the Lord Chief Justice has been making speeches both here and in America on the subject to which he devotes his book. He now gives us the whole case with that masterly clarity and completeness which only a combination of long journalistic experience and high judicial authority could command.

An Inquiry

On the day of publication of Lord Hewart's book the Lord Chancellor announces his intention to institute an inquiry into the whole question which the book raises, thus showing how well Lord Hewart has performed his self-appointed task.

The story of the book is really a very simple one on its political side. Having spent some eight or ten centuries as we have done in developing what we fondly hope to be a perfect system of democratic government, and in disposing one after the other of various despotisms from kings and barons downwards, we now find, says Lord Hewart, that a new and more subtle and tyrannous despotism has been unwittingly and silently created, the despotism of the bureaucracy.

Coming down from the high political level to the detail of the business world, these sentiments will find an echo in the mind of every factory manager and business man whose daily experience brings him into contact with some irritating detail of the new despotism. Parliament decides in its wisdom that it is necessary to limit the freedom of action in, say, factories or mines or transport, and proceeds to give to some Government department a mere outline of what it is desired to do. On this outline, and many of these Acts are nothing more, the bureaucrats fill in the details. The departments are given by Act of Parliament the power to make orders at their sole discretion, and in circumstances which were never considered by the Parliament which passed the Act. The quantity of legislation enacted year by year and day by day by departments under these powers is all too little realised. Taking as a sample 43 general Acts which were passed in 1927, Lord Hewart discovers no less than 1,300 orders, rules, and regulations issued by departments and arising out of these 43 Acts. There is, of course, no doubt whatever that many of these regulations are wise, proper, and for the general good. That, however, does not alter the fact that they are made by some anonymous despot and embody in themselves the very negation of the democratic principle in whose name they are forced upon a nominally free people.

An Impossible Position

When, however, we come down to building regulations, or details of taxation, or the complications of a new enactment like the de-rating law of the last Government, business men will recognise how difficult, if not impossible, the new position has become. Questions are constantly arising in the experience of business people, the answer to which depends upon the unchallengeable word of some inaccessible official. Lord Hewart, in his graphic way, sums up the matter by saying that these cases are in fact tried by a court where "one of the parties is absent; there is no hearing; the decision is given by the opposite party, and there is no appeal."

The book is a short one, all too short, and it is to be hoped that others on the same subject will follow, for there is more to be said.

Lord Hewart objects to the assumption by a bureaucrat of powers which have never been discussed, which arise out of the bureaucrat's own and undebated theories of what is right and proper, and from which a free and independent citizen has no escape and no right of appeal. But he might have gone on to discuss what we will describe as the collateral despotism that constantly arises out of these powers. As an illustration a department armed with general powers may make a regulation to cover, let us say, some detail in regard to the guarding of machinery. It will then become the duty of a local official to see that machinery is properly guarded in accordance with such a regulation. From there the next step is easy. The official may have his own views on the general question of factory management and will proceed to impose upon the unfortunate manufacturer all sorts of onerous conditions as the price of his licence or consent in the simple matter of the guard on the machine.

The whole matter is highly controversial and will require a very great deal of study and debate. It is undoubtedly the duty of the business classes to take the lead in both these respects, for the new despotism affects them directly and, through them, the prosperity of the people as a whole.

Chemical Industry Club

Annual Meeting: Officers for the Year

THE annual meeting of the Chemical Industry Club was held on Thursday, October 31, and was well attended. The much brighter effects produced by the recent decorative scheme were obviously appreciated; the absence of the Victorian overmantels and curtains caused no perceptible lamentation. The portrait gallery also was missed, but here, again, the members managed to withhold their tears on learning that these familiar works now look down benignly on the diners in an adjacent room.

The adoption of the annual report was moved by Dr. Dehn (chairman), and seconded by Mr. J. F. Ronca. It was pointed out as a most satisfactory feature that the Club was being used more than ever before, and that the reduction in the membership was more apparent than real, since the roll had been reduced to live paying members.

In the absence through indisposition of the treasurer (Mr. T. Miller-Jones), the adoption of the balance sheet was moved by Mr. A. J. Chapman, and seconded by Mr. E. T. Brewis.

The following officers were elected for the year:—President, Lord Melchett; chairman, Mr. J. F. Ronca; hon. secretary, Mr. A. J. Chapman; hon. treasurer, Mr. T. Miller-Jones; secretary, Mr. J. Arthur Williams; auditors, Messrs. Hughes and Allen. Warm acknowledgments were paid to Dr. Dehn, the retiring chairman, for his valuable services to the Club, and equally warm was the welcome given to Mr. Ronca, one of the oldest members of the Club, on his succession to the chair.

Another Ontario Nickel Producer

ACCORDING to the *Financial Post* (Toronto), of October 3, the Falconbridge Nickel Mines, Ltd. has practically completed the installation of its smelter equipment, and the plant is expected to be smelting ore at the rate of 250 tons daily before Christmas. Work underground is being centred on the 250 and 1,000 foot levels, where stopes are being prepared for mining. There is said to be no lack of ore, over five million tons having been indicated down to a depth of 500 ft., a quantity sufficient to keep up the production of nickel-copper matte for several years. The management is at the moment studying the problem of improving the grade of ore, and it is proposed to carry out a considerable amount of deep drilling from the bottom level, where an improvement in grade has already been noted. A contract has been let for 1,500 ft. of diamond drilling to be begun immediately.

Chemical Matters in Parliament

Battersea Power Station

Mr. Herbert Morrison, in reply to a question by Sir S. Hoare (House of Commons, November 5), regarding the present position of the projected Battersea power station, stated that arrangements were being made for the publication of an Interim Report of the Government chemists, showing the results of experiments they have been conducting on the prevention of the evolution of oxides of sulphur.

Chemical Warfare

In answer to questions by Mr. Graham White and Rear-Admiral Beamish (House of Commons, November 5), Mr. Shaw said that it was necessary to continue the research work on protection against chemical warfare at both Porton and Sutton Oak experimental stations. As far as he knew the experiments were restricted to defensive work.

Noxious Drugs

Eight firms in this country are at present licensed to manufacture medicinal opium, heroin, cocaine or morphine (*i.e.*, pure drugs under the Acts), according to a statement made by Mr. Clynes in reply to a question by Mr. Mander (House of Commons, October 31). He had no information as to the amount of capital involved or the number of persons employed, but the number was certainly under 50.

Artificial Silk Manufacture

Mr. Kelly asked the Minister of Health (House of Commons, November 4) whether reports had been received from areas in the neighbourhood of artificial silk factories as to the effect on health of the manufacture. Miss Lawrence replied that reports had been received, and they were substantially in accord with the views expressed in the Report of the Chief Alkali Inspector, to which reference was made in her reply of July 25 last to a question from Mr. Kelly.

Protective Clothing

Mr. Kelly asked the Home Secretary (House of Commons, October 31) whether reports had been made by the factory inspectors showing the necessity for the better provision of protective clothing and boots for men employed in the chemical trade. In reply, Mr. Clynes stated that on the receipt of letters from Mr. Kelly further reports were obtained from the factory inspectors, and a letter was being addressed to him dealing fully with the matter.

Plant Safety Organisation

A Lesson that was Remembered

At the annual safety conference at Chicago the following case, illustrating the need of care in transferring processes from laboratory to plant scale tests, was furnished by Mr. H. L. March, of the technical division of the Hercules Powder Co., Ltd., the great explosives firm, of Wilmington, U.S.A. :—

"In the formulation of a new smokeless powder, there were present the usual ingredients : nitrocellulose, diphenylamine, ether and alcohol, and in addition, an inorganic oxidising salt. In the small-scale laboratory experiments it was their practice to dissolve the diphenylamine in the solvent and to add these two ingredients together to the nitrocellulose and oxidising salt. No difficulty was experienced in several hundred experiments.

"The work had progressed to the place where a plant-scale experiment was desirable. Not having carefully considered the situation, no special instructions were issued to the plant, which, following the usual practice, weighed up the diphenylamine along with the oxidising salt. The nitrocellulose and solvent were placed in the mixing bowl and for a short interval the mixer was shut down and the diphenylamine and inorganic salt dumped in loosely on top of the mixture. In a few moments a fire started which practically destroyed the building. Later experiments disclosed an exothermic reaction possible between the diphenylamine and the oxidising salt when only moistened with alcohol, giving off enough heat to set fire to the alcohol.

"We believe that this has taught us to consider carefully all such possibilities in going from research to plant scale. The same applies to all other such operations."

Palestine Potash Ltd.

£400,000 Public Company

Palestine Potash, Ltd., was registered as a "public" company on October 31, with a nominal capital of £400,000 in 230,000 7½ per cent. preference shares of £1 each, 150,000 shares of £1 each, which may be issued as preference or ordinary, and 400,000 ordinary shares of one shilling each. The objects are to acquire a concession or concessions from the Government of Palestine and the Government of Trans-Jordan, pursuant to an agreement dated May 22, 1929, between the Crown agents for the Colonies (acting on behalf of the said Governments) of the one part, and Moise Novomeysky and Major Thomas G. Tulloch of the other part, to prospect, examine, explore and develop the natural mineral resources of the Dead Sea and the surrounding area, to win, refine, prepare for market and deal in mineral salts of all kinds, including potash and common and other salts, etc. The minimum cash subscription is 7 shares. The first directors (to number not less than 5 nor more than 15) are :—The Earl of Lytton, Knebworth Hall, Knebworth Park ; Israel B. Brodie, c/o International Finance Corporation, 2560, Graybar Buildings, New York, U.S.A., lawyer ; B. Flexner, c/o Palestine Economic Corporation, 40, Exchange Place, New York, U.S.A., lawyer ; E. Friedman, 915, Broadway, New York, U.S.A., manufacturer ; E. W. D. Tennant, 9, Mincing Lane, E.C., director of C. Tennant, Sons and Co., Ltd. ; F. M. Warburg, c/o Palestine Economic Corporation, 40, Exchange Place, New York, U.S.A., banker ; T. G. Tulloch, 2, South Parade, Southsea, transport engineer ; Moise Novomeysky, 62, Pall Mall, S.W.1, mining engineer ; and David Lyell, 15, Essex Villas, W.8, chartered civil engineer. Qualification : £250 shares. A majority of the directors must consist of persons who are British subjects, or British and Palestinian subjects together. Remuneration : as fixed by the company. Solicitors : Herbert Oppenheimer and Co., 1, Finsbury Square, E.C.2. The file number is 243,621.

I.C.I. in Java

It has been reported (states the U.S. Trade Commissioner in Batavia) that the firm of N. V. Handel and Industrie Mij. "Mestfabriek Java," Semarang, dealing in festilisers, has recently been sold to Imperial Chemical Industries by the chief stock holders, Maclaine Watson and Co., a British trading company. "Mestfabriek Java," and the International Crediet and Handelsvereeniging "Rotterdam," local agents for an American company, have been getting the largest part of the estate business in ammonium sulphate in the Netherlands East Indies. The purchase of the local firm by the Imperial Chemicals Industries indicates a very definite move of the British chemical interests to recapture the trade in ammonium sulphate lost during the coal strike of 1926.

Russian Order for Beet-Drying Plant

Soviet sugar-beet firms have placed an order with the Dudley firm of Gibbons Bros. for the installation of drying plant in various parts of the Ukraine to the approximate value of £40,000. The installation is now in progress, and skilled workmen have left England for Russia, while the unskilled labour is to be recruited locally in Russia. The contracts have been made direct with the Russian firms. The drying apparatus being installed is similar to that erected recently in Oxfordshire, and should the experiment prove successful it is quite possible that further large orders will be received.

Appointments Vacant

Assistant for Chemical Laboratory. Details on p. xxvii.

Public Analyst for the Harcourt Butler Institute of Public Health, Rangoon. Details from the Secretary to the High Commissioner for India, General Department, 42, Grosvenor Gardens, London, S.W.1. November 23.

Chemist with experience in the manufacture of titanium pigments. Details on p. xxvii.

From Week to Week

THE REGISTERED OFFICE of the Zinc Corporation, Ltd., is now situated at 95, Gresham Street, London.

MR. S. JOHNSON, B.Sc., of Newcastle, has been awarded a research grant by the Lister Institute for Preventive Medicine, London.

THE WORLD ENGINEERING CONFERENCE to be held this month at Tokyo will be attended by 250 American engineers, including many chemical engineers.

DR. F. A. MASON will read a paper on "Peter Griess" at a meeting of the Manchester Section of the Society of Dyers and Colourists, to be held on Friday, November 15, in the lecture room of the Manchester Literary and Philosophical Society, at 7 p.m.

DR. EZER GRIFFITHS, Dr. J. R. Vickery, Mr. R. R. Haddow and Mr. M. Holmes, of the National Physical Laboratory, Teddington, are at present in New Zealand studying cold storage problems relating to the marketing abroad of New Zealand foodstuffs. Their investigations are expected to occupy four months.

THE I.G. FARBENINDUSTRIE A.-G., in its report for the third quarter of 1929, states that progress has been good. Among other things, the sale of synthetic petrol is up to expectations. Mention is made of the agreement with the Vereinigten Glanzstoff-Fabriken with regard to the sale of viscose rayon, and it is hoped that this may lead to a general agreement.

A NEW METHOD of extracting cod liver oil has been developed in Oslo, Norway, by the Director of Research on Fish Products. Further laboratory tests have substantiated results obtained from practical tests made at Henningsvaer last winter. It is claimed this new method produces better oil as well as a better yield, and the hope is expressed that funds and assistance will be forthcoming to try the new method on a larger scale at Lofoten this coming winter

PROFESSOR J. S. HALDANE, one of the three gas referees appointed by the Board of Trade under the Gas Regulation Act, 1920, giving evidence before the Committee on Coal Gas Poisoning at the Board of Trade on Tuesday, expressed dissatisfaction concerning the inquiry into the Holborn explosion. He said that by no means all the explosions and cases of poisoning by gas in houses and along the line of streets were due to coal gas. Some were due to short circuits in electric cables laid in bitumen and others to gases formed by anaerobic fermentation.

DR. F. E. SMITH, F.R.S., secretary of the Department of Scientific and Industrial Research, speaking on Wednesday at the annual meeting of the British Cast Iron Research Association, said that experimental retorts for low temperature carbonisation erected at the Fuel Research Station, constructed to the design of the Association and made of material recommended by them, had shown no sign of distortion after 14 months of operation. The material used was developed from the work of Dr. A. L. Norbury and Mr. E. Morgan, of the staff of the Association.

LORD MELCHETT, presiding at a luncheon, in London, of labour leaders interested in the work of the Industrial Health Education Society, stated that employers in this country were very backward on matters which affected national health. He had always been struck, he said, by the fact that in America one never saw a working man in working clothes in the streets or in the tramcars. He always changed before leaving his works. "There is another side to that problem," added Lord Melchett. "I remember at our works in Cheshire many years ago being fired with a zeal for reform. I installed shower baths, lockers, and changing accommodation, but I was disappointed at the relatively small number of people who took advantage of those facilities."

THE UNDERFEED STOKER CO., LTD., recently announced that they had secured the rights for manufacturing Vibro Conveyors under the Schenck-Heymann System at their Derby works. We now learn that the company have already secured an order for six Schenck-Heymann Vibro-Conveyors from Imperial Chemical Industries. The conveyors are of special design and are capable of handling fine cement dust at a temperature of approximately 400° C., with capacities up to 30 tons per hour. We also understand that a further conveyor of this type has been ordered for use as a combined conveyor and screen, its capacity being 100 tons of limestone per hour. The Underfeed Stoker Co. state that a descriptive catalogue is in course of preparation and will shortly be available.

THE PRODUCTION OF TUNG OIL is to be encouraged by the Empire Marketing Board, which has approved a grant to the Royal Botanic Gardens, Kew, for the distribution of tung oil seeds to various parts of the Empire. Tung oil is an essential constituent of certain types of varnish, and it was used during the war in special water-resistant varnishes for aeroplane work. Until recently the world's wants were almost entirely supplied by China, but after the war tung oil production was successfully started in America. Seeds have been distributed by Kew to various Empire countries, and promising trials are now in hand in a number of Dominions and Colonies. Areas concerned include Kenya, Australia, New Zealand, South Africa, India, Ceylon, Assam, the West Indies, Malaya, Burma, Hong Kong, Cyprus, Tanganyika and Palestine.

MR. W. ROWLAND JAMES has been appointed to the propaganda staff of the Chilean nitrate counties in Wales.

MR. W. A. S. CALDER, executive director of Chance and Hunt, Ltd., is in hospital as the result of an accident in which he suffered severe injuries.

MR. A. H. CHADWICK has resigned the office of director of Harrison Blair and Co., Ltd., chemical manufacturers, of Farnworth, near Bolton.

MR. HENRY WOODALL, deputy governor of the Gas Light and Coke Co., London, has been elected as the new president of the British Commercial Gas Association.

APPLICATIONS FOR GRANTS from the Chemical Society Research Fund must be made on or before Monday, December 2. An announcement on the subject appears on p. xxvii.

RECENT WILLS INCLUDE :—Mr. James Cunliffe, of Branch Street, Stacksteads, Lancashire (net personalty £7,106), £9,582. He left his business at Liverpool to his son, John Ormerod Cunliffe.

INSTITUTE OF CHEMISTRY NEWS.—New editions of the *Register of Fellows, Associates and Students* and of *Official Chemical Appointments* will be published in 1930. Forms have been circulated for the correction of entries.

THE UNIVERSITY OF ILLINOIS has sent copies of three theses submitted for the degree of Ph.D. of the University, as follows :—"Stereoisomerism of Diphenyl Compounds," by W. W. Moyer; "The Magnetic Properties of Monatomic Oxygen," by O. E. Kurt; "Arginine Metabolism," by C. W. Scull.

MR. J. H. SMITH, of Widnes, labour manager to Imperial Chemical Industries, was the defendant at Liverpool Assizes last week in an action for damages, arising out of a motor accident, brought by Mr. R. M. Stratton, a chemist at Bell's Poilite Works, Widnes. The jury found that both parties were equally responsible, and judgment was entered for the defendant.

THE DIRECTORS of the Leeds Fireclay Co. have decided to offer to shareholders a limited number of the company's holding of 10s. ordinary shares in Coal Conversion at the price of 11s. per share. The authorised share capital of Coal Conversion is £500,000, of which £100,007—in 200,014 10s. ordinary shares—is paid up. Leeds Fireclay Co. has the majority holding.

A FOUR-GRAIN "BOMB" OF RADIUM, lent by the Radium Belge company to the National Radium Trust, has been handed over to the Westminster Hospital. Later on the bomb may be bought. A "radon" plant is to be installed at the National Physical Laboratory for the purpose of supplying radium emanation to hospitals or other institutions which otherwise could receive no direct assistance in connection with radium therapy.

A COMPANY has been formed in Poland, under the title Société Générale d'Industrie en Pologne, "to deal with the chemical industry." The company has a share capital of thirty million Belgian francs (£114,942), and is said to be controlled by the Union Chimique Belge. Other concerns interested in the matter are the Chase Securities Corporation, the Union Européenne, the Banque Union Parisienne, the Wiener Bank Verein, and the Oesterreichische Kreditanstalt.

CHEMICAL FOAM was used by the Hull Fire Brigade on Monday night to smother burning pitch in the yard of Major and Co., tar distillers, of Wincolmlee. Boiling varnish overflowed and set fire to a vat containing 600 gallons of pitch. By the use of a foam-generating machine the fire was kept in check until the arrival of the City Fire Brigade, whose efforts were divided between smothering the burning pitch and cooling the naphtha tanks with water. The fire was quickly under control and no damage was done to the naphtha tank.

THE UNION CHIMIQUE BELGE is continuing its process of expansion and absorption of chemical plants, and negotiations are practically completed for absorbing three additional companies. These are the Compagnie Belge des Produits Chimiques de Schoonaerde, chiefly engaged in the production of coal tar derivatives; the Produits Refractaires de Saint Ghislain, manufacturers of refractory products; and the Suivres, Metaux et Produits Chimiques d'Hemixem, an important producer of sulphuric acid. In view of its expansion, an increase in the capitalisation of the Union Chimique Belge is expected in the near future.

Obituary

JOHN ALFRED HARTLEY, B.Sc., A.I.C., on August 26, aged 38. He was engaged in his father's business, Hartley's Brewery Co. at Cowick, devoting himself to brewing chemistry and biology.

JOHN CHARLES PLATTS, F.I.C., at Sheffield, on September 20, aged 63. He was chief chemist at the Openshaw Works of Armstrong Whitworth and Co., Ltd., from 1900 to 1915, and in 1916 became chief chemist at the company's Canadian works at Longuenil, Quebec. When the plant closed down he came back and worked in the Openshaw laboratory for a year. From that time he was engaged with Jonas and Colver and with T. Firth and Sons, Ltd., respectively, until 1927, when he retired owing to ill-health.

DR. OTTO MATTHIES, of the Agfa works of the I.G., on October 24, aged 40, as the result of an accident in New York. He carried out a great deal of work on the study of photographic emulsions, which mainly appeared in the form of patents taken out by the I.G.

References to Current Literature

British

ANALYSIS.—Application of semicarbazones to the action of ketones. S. Viebel. *Journal Chem. Soc.*, October, pp. 2423–2424.

The determination of gelatin in dilute solutions. J. G. Kane and H. E. Watson. *J.S.C.I.*, November 1, pp. 335–336T.

Determination of traces of iron by photochemical and colorimetric methods. B. S. Charma. *J.S.C.I.*, November 1, p. 336T.

APPARATUS.—A robust microbalance of high sensitivity, suitable for weighing sorbed films. J. W. McBain and H. G. Tanner. *Proc. Roy. Soc. A.*, November 1, pp. 579–586.

ELECTROCHEMISTRY.—Some new aspects of the electrochemical oxidation of organic and inorganic compounds. I.—The electrochemical oxidation of organic compounds. II.—The electrochemical preparation of vanillin, saccharin, and dyestuffs. F. Fichter. *J.S.C.I.*, November 1, pp. 325–329T, 329–333T.

GAS.—Recent advances in our knowledge of natural gas and "cracking" gas and their industrial utilisation. H. M. Stanley. *Journal Inst. Petroleum Tech.*, October, pp. 516–552.

GENERAL.—The order of removal of metals from amalgams. A. S. Russell. *Journal Chem. Soc.*, October, pp. 2398–2401.

Sulphide colours on metallic copper. F. H. Constable. *Proc. Roy. Soc. A.*, November 1, pp. 630–635.

Heat insulation. E. H. Lewis. *Journal Inst. Fuel.*, October, pp. 100–101.

OILS.—Lubricating oils: Carbon residue estimation. The Ramsbottom method. C. I. Kelly. *Journal Inst. Petroleum Tech.*, October, pp. 495–515.

The rates of saponification of various commercial oils, fats and waxes and pure triglycerides by aqueous alkali. J. W. McBain, C. W. Humphreys and Y. Kawakami. *Journ. Chem. Soc.*, October, pp. 2185–2197. The rates differ markedly, and the results are explained on the basis of varying degrees of emulsification.

Composition of neem oil. The so-called margosic acid. A. C. Roy and S. Dutt. *J.S.C.I.*, November 1, pp. 333–335T.

ORGANIC.—Synthesis of anthracene homologues. I.—2 : 6- and 2 : 7-dimethylanthracenes. G. T. Morgan and E. A. Coulson. *Journal Chem. Soc.*, October, pp. 2203–2214.

The reduction of nitro-compounds in pyridine solution. O. L. Brady, J. N. E. Day and C. V. Reynolds. *Journal Chem. Soc.*, October, pp. 2264–2266. Excellent yields of amino-compounds are obtained by reduction of nitro-compounds in pyridine with hydrogen sulphide in the presence or absence of ammonia or piperidine.

PLANT.—The installation and operation of gas producers for metallurgical furnaces. J. S. Atkinson. *Journal Inst. Fuel*, October, 71–89.

United States

ANALYSIS.—Calculation of the compounds in Portland cement. R. H. Bogue. *Ind. Eng. Chem. (Analytical Edition)*, October 15, pp. 192–197.

Determination of the sulphur content of gases from boiler furnaces. E. Taylor and H. F. Johnstone. *Ind. Eng. Chem. (Analytical Edition)*, October 15, pp. 197–199.

Determination of phenol in presence of salicylates. E. H. Hamilton and C. M. Smith. *Ind. Eng. Chem. (Analytical Edition)*, October 15, p. 232.

Stabilised starch indicator. M. S. Nichols. *Ind. Eng. Chem. (Analytical Edition)*, October 15, pp. 215–216.

APPARATUS.—Laboratory rectifying columns with non-siphoning bubbling plates. J. H. Bruun. *Ind. Eng. Chem. (Analytical Edition)*, October 15, pp. 212–213.

CORROSION.—Ceramic coatings, an outcome of corrosion difficulties in oil cracking. J. C. Morrell and W. F. Faragher. *Chem. Met. Eng.*, October, pp. 596–599.

Corrosion testing apparatus. D. F. Othmer. *Ind. Eng. Chem. (Analytical Edition)*, October 15, p. 209.

GENERAL.—Ammoniated phosphate: A new factor in fertiliser manufacture. R. S. MacBride. *Chem. Met. Eng.*, October, pp. 592–595.

Ammonia oxidation makes further gains in chamber plants. T. R. Olive. *Chem. Met. Eng.*, October, pp. 614–617.

Reaction between phosphorus pentoxide and lubricating oils. C. C. Furnas. *Ind. Eng. Chem. (Analytical Edition)*, October 15, p. 185.

LEAD TETRAETHYL.—Analytical reactions of tetraethyl lead. G. Edgar and G. Calingaert. *Ind. Eng. Chem. (Analytical Edition)*, October 15, pp. 221–222. Analytical methods are described for the determination of lead tetraethyl and related compounds in concentrated preparations, and of lead tetraethyl in dilute solution in petrol. The limits of accuracy of these methods, and their applicability under different conditions, are discussed.

PLANT.—Modern drives turn wheels of chemical plant equipment. W. Staniar. *Chem. Met. Eng.*, October, pp. 604–608.

"Creep limit" alters technique in design of large tanks. J. K. Wood. *Chem. Met. Eng.*, October, pp. 610–613.

A combined electrochemical switchboard. W. F. Munn. *Ind. Eng. Chem. (Analytical Edition)*, October 15, pp. 208–209.

TOBACCO.—The determination of "free nicotine" in tobacco. The apparent dissociation constants of nicotine. H. B. Vickery and G. W. Pucher. *Journal Biological Chem.*, October, pp. 233–241. The amount of "free nicotine" passing over on steam distillation of tobacco depends on the hydrogen ion concentration of the extract. The apparent dissociation constants of highly purified nicotine have been determined, and a dissociation curve is given from which the proportion of total nicotine occurring in the free form in a tobacco extract of known hydrogen ion concentration may be read.

German

ANALYSIS.—The possibilities of application and the limits of emission-spectral analysis. G. Scheibe. *Zeitschrift angewandte Chem.*, October 26, pp. 1017–1022.

The detection of heavy metals by means of "Dithizon" (diphenylthiocarbazone). H. Fischer. *Zeitschrift angewandte Chem.*, October 26, pp. 1025–1027.

The evaluation of acetic anhydride. E. Terlinck. *Chemiker-Zeitung*, October 19, pp. 814–815; November 2, pp. 850–851.

ENZYMES.—The mechanism of enzyme action, with a contribution to bread-making. F. F. Nord. *Zeitschrift angewandte Chem.*, October 26, pp. 1023–1025.

GENERAL.—The preparation of one gram of rhenium. J. and W. Noddack. *Zeitschrift anorganische Chem.*, Vol. 183, Part 4, pp. 353–375. One gram of the new element rhenium, discovered a year or two ago, has been prepared.

The effect of electric discharges on chemical reactions. R. Schwartz and W. Kunzer. *Zeitschrift anorganische Chem.*, Vol. 183, Part 4, pp. 376–383.

Miscellaneous

ANALYSIS.—The determination of uranium and thorium by means of 8-hydroxyquinoline. F. Hecht and W. Reich-Rorwig. *Monatshefte*, Vol. 53 and 54, October, pp. 596–606 (in German).

CATALYSIS.—The catalytic decomposition of aqueous solutions of formic acid by the platinum metals. IV.—E. Müller and W. Loerpabel. *Monatshefte*, Vol. 53 and 54, October, pp. 825–851 (in German).

ORGANIC.—Investigations on perylene and its derivatives. XXVI. A. Zinke and H. Kolmayr. *Monatshefte*, Vol. 53 and 54, October, pp. 361–366 (in German).

The determination of alkalis in minerals by means of the interferometer. G. Burger. *Monatshefte*, Vol. 53 and 54, October, pp. 985–988 (in German).

STEROLS.—The anti-oxygenic action of cholesterol and ergosterol. IX.—E. Montignie. *Bulletin Soc. Chim. France*, August, pp. 709–710 (in French).

The action of cinnamic acid on cholesterol: The production of a new isomer of cholesterol. E. Montignie. *Bulletin Soc. Chim. France*, August, p. 771 (in French).

Irradiated sterols. E. Montignie. *Bulletin Soc. Chim. France*, August, pp. 771–776 (in French).

Patent Literature

The following information is prepared from published Patent Specifications and from the Illustrated Official Journal (Patents) by permission of the Controller to H.M. Stationery Office. Printed copies of full Patent Specifications accepted may be obtained from the Patent Office, 25, Southampton Buildings, London, W.C.2, at 1s. each.

Abstracts of Complete Specifications

319,801. Aqueous Dispersions of Organic Materials such as Rubber or the Like, Treatment of. The Anode Rubber Co. (England), Ltd., 110, Bishopsgate, London, E.C.3. From F. Gabor, 90, Thököly-ut, Budapest VII, Hungary. Application date, March 29, 1928.

Rubber latex is coagulated by adding a substance normally having a stabilizing or neutral action on it, which is coagulable by the action of heat, *e.g.*, albumens of different origin, haemoglobin, and other animal and vegetable proteins. The latex is coagulated by heating. Thus a latex mix of 40—60 per cent. strength may be mixed with 3—5 per cent. of white of egg, and heated to 80°—90° C. The latex may be natural or artificial, and may be vulcanised, or mixed with other ingredients such as cellulose esters, viscose, resins, etc. The latex may also be employed in the form of reversible concentrates, creams, pastes, or plastics. If the latex is preserved with ammonia, the alkalinity is preferably diminished. An example of the continuous production of filaments of rubber is given.

319,805. Amino Derivatives. W. Smith, J. Thomas, and Scottish Dyes, Ltd., Earl's Road, Grangemouth, Scotland. Application date, April 30, 1928.

The alkylation or aralkylation of amino derivatives is often difficult, but in this invention they are first converted to their sulphaminic acid derivatives which are then treated with alkylating or aralkylating agents. The products may be submitted to hydrolysis. The process includes the treatment of vat dyestuff derivatives such as amino-dibenzanthrones and their sulphaminic acid derivatives. In an example, 2-methylamino-anthraquinone is prepared by the action of pyridine sulphur trioxide in pyridine suspension on 2-aminoanthraquinone, followed by treatment of the sodium salt of the resulting sulphaminic acid with dimethyl sulphate. Other examples describe the treatment of other amino-anthraquinones and also the production of monomethyl-aniline and methylamino-dibenzanthrone. Other methods may be employed for the preparation of the sulphaminic acid derivatives, and other alkylating and arylkylating agents may be used.

319,822. Condensation Products of Cyanamide and Formaldehyde, Manufacture of. A. Carpmael, London. From I.G. Farbenindustries Akt.-Ges., Frankfort-on-Main, Germany. Application date, June 28, 1928.

Cyanamide reacts with formaldehyde either directly or in aqueous solution and an almost quantitative precipitation of the cyanamide from an aqueous extract of nitro-lime can be obtained. The reaction may be effected in a neutral or acid solution, but is considerably accelerated in an alkaline solution. The condensation product is only slightly soluble in water and insoluble in most organic solvents, but soluble in dilute hydrochloric acid and formic acid. Some examples are given.

319,850. Chemically Active Anhydrous Oxide of Aluminium, Methods for Obtaining. C. A. Blanc, 3, Piazza del Popolo, Rome. Application date July 6, 1928.

Chemically active anhydrous aluminium oxide is obtained by heating hydrated aluminium nitrate to 140°—180° C. under atmospheric pressure. It is found that the alumina obtained, even if mixed with water, may be used directly in an electric furnace for the production of aluminium, without subjecting it to a preliminary heating to 1,200° C. which is required with aluminium hydrate. Aluminium oxide obtained in this way differs from that obtained by calcining the hydrate by its greater chemical activity. It is rapidly soluble in various acids, and salts such as the sulphate are more easily obtained than from the hydrate.

319,860. Sulphur Dyestuffs, Manufacture of. A. Carpmael, London. From I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, July 18, 1928.

The starting compound for the manufacture of a sulphur dyestuff is heated with a polysulphide in the presence of a hydroaromatic hydroxy compound. The latter acts as a solvent for the poly-sulphide and may be recovered from the reaction mixture without dehydrogenation. Suitable solvents include cyclo-hexanol and its homologues, *ac.*1-and *ac.*2-hydroxy-tetra-hydro-naphthalene, *ac.*1- and *ac.*2-hydroxy-deca-hydronaphthalene. The sulphurisation can be effected in a homogeneous melt at relatively high temperatures, and the components are usually easily soluble in the above solvents. The sulphurisation is effected in a shorter time and without the formation of less soluble by-products. The process is particularly suitable for the production of sulphur dyestuffs derived from indo-phenols and their leuco compounds. Examples are given of the production of dyestuffs from sodium sulphide, sulphur, methyl-cyclohexanol, and 3-(4^1-hydroxy-phenyl)-aminocarbazol; sodium sulphide, sulphur, cyclohexanol, and the leuco-indophenol prepared from 1-para-tolyl-aminonaphthalene-8-sulphonic acid and para amino-phenol; sodium sulphide, sulphur, methyl-cyclohexanol, and 4-amino-3-methyl-4^1-hydroxy-diphenyl-amine; sodium sulphide, sulphur, methyl-cyclohexanol, and 4-phenylamino-4^1-hydroxy-diphenylamine.

320,113. Esters, Processes for the Production of. Holzverkohlungs Industrie, Akt.-Ges., Konstanz, Baden, and O. Fuchs, 43, Beethovenstrasse, Konstanz, Baden, Germany. Application date, July 6, 1928. Addition to 295,275.

Specification No. 295,275 (see The Chemical Age, Vol. XIX, p. 347) describes the production of esters of the lower members of the fatty acid series, a mixture of acids and alcohols being heated under pressure in the presence of catalysts suitable for the production of moderate hydrogen-ion concentrations, particularly small quantities of mineral acids or acid salts or salts of weak bases. It is now found that the esterification of fatty acids, *e.g.*, acetic acid and propionic acid with alcohols cau be effected without the use of catalysts if the temperature is kept at 150°—250° C. under pressure, and the ester is continually removed by distillation. An example is given of the treatment of acetic acid and methanol.

Note.—Abstracts of the following specifications which are now accepted, appeared in The Chemical Age when they became open to inspection under the International Convention:—289,795 (M. Polanyi and S. von Bogdandy), relating to halogen derivatives of organic compounds, see Vol. XIX, p. 11; 293,430 (Kohlenveredlung Akt.-Ges.), relating to distilling, cracking, and hydrogenating oils, tars, etc., see Vol. XIX, p. 219; 301,500 (P. Dutoit), relating to phosphorus pentasulphide, see Vol XX, p. 130; 302,144 (Goodyear Tire and Rubber Co.), relating to rubber antioxidants or age resisters, see Vol. XX, p. 159; 303,351 (I.G. Farbenindustrie Akt.-Ges.), relating to recovery of nitric acid, see Vol. XX, p. 234; 303,355 (I.G. Farbenindustrie Akt.-Ges.), relating to alkali metal nitrates, see Vol. XX, p. 234; 307,871 (Compagnie Nationale de Matières Colorantes et Manufactures de Produits Chimiques du Nord Réunies Etablissements Kuhlmann), relating to chromed complexes of chromable azo dyestuffs, see Vol. XX, p. 479.

International Specifications not yet Accepted

318,107. Dyes. I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. International Convention date, August 27, 1928.

An α-derivative of a 4-methyl-5-halogen-7-alkoxy-isatin is condensed with a 4-halogen-1-naphthol to obtain vat dyes. Thus, 4-chlor-naphthol may be condensed with 4-methyl-5-chlor-7-methoxy-isatin-α-chloride and α-arylide in chlorbenzene. The products dye cotton fast greenish-blue shades and are suitable for printing.

318,146. Trisazo Dyes. E. I. Du Pont de Nemours and Co., Wilmington, Del., U.S.A. (Assignees of H. Jordan, 1111, Franklin Street, Wilmington, Del., U.S.A.). International Convention date, August 28, 1928.

These dyes are obtained by diazotising a 1-amino-8-naphthol-

disulphonic acid having only one sulpho group in each nucleus, coupling to an amino compound having a *p*-position and not containing a free hydroxy-, sulpho-, or second amino group, diazotising the aminoazo compound, coupling it to J-acid, diazotising the disazo dye and coupling it to a naphthalene compound having at least one hydroxy group. Dyestuffs described include H-acid → α-naphthylamine → J-acid → 1-naphthol-4-sulphonic acid (reddish-blue on cotton) and H-acid → α-naphthylamine (or 3-amino-4-cresol-methyl ether) → J-acid → H-acid (greenish-blue). Several other first, second, and end components are specified.

318,149. PURIFYING ALUMINIUM SALT SOLUTIONS BY ELECTROLYSIS. K. W. Palmaer, 60, Sturegatan, Stockholm, International Convention date, August 28, 1928.

Aluminium sulphate solution containing iron is neutralised by adding calcium carbonate and electrolysed with a flowing mercury cathode. The current density and movement of the mercury are so regulated that the deposited iron dissolves in it without the formation of a film. The iron may be removed from the mercury continuously or intermittently by treating with mercurous nitrate solution.

318,154. OBTAINING PER-SALTS. Naamlooze Vennootschap Electro-Chemische Industrie, 20, Molenweg, Roermond, Holland. International Convention date, August 28, 1928.

When preparing per-salts by anodic oxidation, the cathode consists of alloys of which one or more of the constituents decompose the electrolyte catalytically when used alone, but not when present in an alloy. The cathode may consist of an alloy of two or more catalytic metals, viz., platinum, gold, nickel, iron, chromium, and silver, or one of these metals with a corrodible metal such as aluminium, tin, or zinc. Thus, potassium percarbonate is obtained by electrolysing a saturated solution of potassium carbonate below 0° C. using an anode of platinum and a cathode of V2A steel containing 0·25 per cent. carbon, 20 per cent. chromium, 7 per cent. nickel. Similar examples are given of the preparation of ammonium per phosphate and sodium perborate.

Specifications Accepted with Date of Application

292,951. High concentration of nitric acid, Process for. E. I. Du Pont de Nemours and Co. June 27, 1927.

294,259. Metallic salt solutions contaminated by organic substances, Purification of. I.G. Farbenindustrie Akt.-Ges. July 21, 1927.

294,986. Acid wood dyestuffs, Manufacture of. I.G. Farbenindustrie Akt.-Ges. August 3, 1927. Addition to 282,409.

298,972. Alkyl esters of resin acids, Production of. Hercules Powder Co. October 18, 1927.

299,330. Acetone, Manufacture of. Consortium für Elektro-Chemische Industrie Ges. October 22, 1927.

300,949. Vulcanization of rubber. Goodyear Tire and Rubber Co. November 21, 1927.

301,093. Hydrocyanic acid, Production of. A. R. Frank and N. Caro. November 24, 1927. Addition to 282,379.

310,365. Anhydrous chlorides, Production of. I.G. Farbenindustrie Akt.-Ges. April 24, 1928. Addition to 293,410.

320,598. Phosphorus from phosphates, Process of obtaining. H. Wade. (*Soc. Italiana per le Industrie Mineraria e Chimiche.*) April 13, 1928.

320,619. Hydrocarbons of low boiling point from oils or from solid fuels, Production of. R. E. Goldsbrough and H. Tevis. July 13, 1928.

320,606. Concentration of lower aliphatic acids. British Celanese, Ltd., and J. Billing. July 11, 1928.

320,638. Alkylated phenols and their hydrogenation products, Manufacture of. W. P. Williams. (*Schering Kahlbaum Akt.-Ges.*). July 17, 1928.

320,641. Derivatives of carbazole, Manufacture of. A. Carpmael. (*I.G. Farbenindustrie Akt.-Ges.*). May 17, 1928.

320,699. Vulcanized rubber, Manufacture of. J. Y. Johnson. (*I.G. Farbenindustrie Akt.-Ges.*). July 26, 1928.

320,708. Fertilisers containing ammonium nitrate, Manufacture of. J. Y. Johnson. (*I.G. Farbenindustrie Akt.-Ges.*). August 7, 1928.

320,733. Calcium cyanide, Manufacture of. J. Y. Johnson. (*I.G. Farbenindustrie Akt.-Ges.*). September 15, 1928.

320,742. Solubilised vat dye, Manufacture of—and process of dyeing therewith. British Dyestuffs Corporation, Ltd., and A. J. Hailwood. September 26, 1928. Addition to 280,647.

320,818. Electrolytic preparation or purification of metals. L. St. C. Broughall. December 31, 1928.

300,903. Raw phosphates or other phosphate-containing substances, Treatment of—with acids. Stockholms Superfosfat Fabriks Aktiebolag. November 19, 1927.

Applications for Patents

[*In the case of applications for patents under the International Convention, the priority date (that is, the original application date abroad which the applicant desires shall be accorded to the patent) is given in brackets, with the name of the country of origin. Specifications of such applications are open to inspection at the Patent Office on the anniversary of the date given in brackets, whether or not they have been accepted.*]

British Celanese, Ltd., Ellis, G. H., Olkin, H. C. and Kirk, E. W. Manufacture of laminated articles. 32,686. October 28. (United States, November 2, 1928.)

—— Dyeing, etc. cellulose derivatives. 33,311. November 1. (August 1, 1928.)

—— Manufacture of artificial and compound sheets, etc. 33,392. November 2. (United States, November 9, 1928.)

—— Production of artificial materials. 33,393. November 2.

British Celanese, Ltd. and Dreyfus, C. Manufacture of artificial filaments, etc. 32,810. October 29.

Carpmael, A. and I.G. Farbenindustrie Akt.-Ges. Manufacture of resin-like products. 32,857. October 29.

—— Manufacture of stable acridine salt solutions. 33,314. November 1.

—— Manufacture of naphthalene-sulphonic dicarboxylic acids. 33,315. November 1.

Carpmael, A. and Schering-Kahlbaum Akt.-Ges. Manufacture of pyridine compounds. 33,188. October 31.

Chemische Fabrik Schonenwerd H. Erzinger Akt.-Ges. and Erzinger, H. Production of red lead. 33,003. October 30.

Crozier, R. H. Distillation of coal, etc. 32,996. October 30.

Etridge, J. J. and Imperial Chemical Industries, Ltd. Production of plasters from anhydrite. 33,272. November 1.

Filtration and Water Softening Proprietary, Ltd. Filtration of water. 32,717. October 28. (Australia, October 29, 1928.)

Groves, W. W. and I.G. Farbenindustrie Akt.-Ges. Photographic bleaching-out process. 32,696. October 28.

I.G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Carrying out reactions with hydrogen. 32,958. October 30.

—— Manufacture of fertilizers. 32,959. October 30.

—— Manufacture of esters. 32,960. October 30.

—— Manufacture of tyres for vehicles. 32,961. October 30.

—— Manufacture of halogen derivatives. 32,962. October 30.

—— Manufacture of esters. 33,153. October 31.

—— Manufacture of halogen anthraquinone-β-α-acridones. 33,154. October 31.

——Conversion of hydrocarbons by electric discharges. 33,264. November 1.

I.G. Farbenindustrie Akt.-Ges. Manufacture of vat dyestuffs. 32,834. October 20. (Germany, October 29, 1928.)

—— Colouring natural rubber, etc. 32,839. October 29.

—— Continuous extraction process. 32,978. October 30. (Germany, July 27.)

—— Manufacture of 2 : 4 : di (nitrophenyl)-6-hydroxytriazine-1 : 3 : 5. 33,034. October 30. (Germany, October 31, 1928.)

— Printing. 33,155. October 31.

—— Manufacture of N-monoacylated diamino-arsenobenzenes. 33,301. November 1. (Germany, November 1, 1928.)

—— Manufacture of artificial fibres. 33,305. November 1. (Germany, November 2, 1928.)

—— Production of nitrogenous condensation products. 33,409. November 2.

Imperial Chemical Industries, Ltd. Apparatus for carrying out reactions. 32,687. October 28. (United States, October 29, 1928.)

—— Producing anhydrous metal chlorides. 33,369. November 2.

—— Welding copper. 33,372. November 2.

Naamlooze Vennootschap de Bataafsche Petroleum Maatschappij. Conversion of unsaturated hydrocarbons. 32,712. October 28. (Holland, November 13, 1928.)

—— Manufacture of urea. 32,713. October 28. (Holland, November 13, 1928.)

Naugatuck Chemical Co. Treatment, etc. of rubber. 33,013. October 30. (United States, November 26, 1928.)

Sachtleben Akt.-Ges. für Bergbau und Chemische Industrie. Drying chemical, etc., products. 32,099. October 22. (Germany, October 25, 1928.)

Schering-Kahlbaum Akt.-Ges. Manufacture of menthenes. 33,182. October 31. (Germany, November 15, 1928.)

—— Manufacture of alkylated phenols. 33,183. (Germany, November 29, 1928.)

Scottish Dyes, Ltd., Thornley, S. and Thomas, J. Dibenzanthrone derivatives. 33,131. October 31.

Scottish Dyes, Ltd., Thornley S., Thomas, J. and Thomson, J. Production of benzanthrone derivatives, etc. 33,132. October 31.

Soc. of Chemical Industry in Basle. Manufacture of monoazo-dyestuffs. 32,084. October 22. (Switzerland, September 10, 1927.)

Weekly Prices of British Chemical Products

The prices and comments given below respecting British chemical products are based on direct information supplied by the British manufacturers concerned. Unless otherwise qualified, the figures quoted apply to fair quantities, net and naked at makers' works.

General Heavy Chemicals

ACID ACETIC, 40% TECH.—£19 per ton.

ACID BORIC, COMMERCIAL.—Crystal, £20 per ton; powder, £21 per ton; extra fine powder, £23 per ton. Packed in 2 cwt. bags carriage paid any station in Great Britain.

ACID HYDROCHLORIC.—3s. 9d. to 6s. per carboy d/d, according to purity, strength and locality.

ACID NITRIC, 80° TW.—£21 10s. to £27 per ton, makers' works according to district and quality.

ACID SULPHURIC.—Average National prices f.o.r. makers' works, with slight variations up and down owing to local considerations; 140° Tw., Crude Acid, 60s. per ton. 168° Tw., Arsenical, £5 10s. per ton. 168° Tw., Non-arsenical, £6 15s. per ton.

AMMONIA ALKALI.—£6 15s. per ton f.o.r. Special terms for contracts.

BISULPHITE OF LIME.—£7 10s. per ton, f.o.r. London, packages free.

BLEACHING POWDER.—Spot, £9 10s. per ton d/d; Contract, £8 10s. per ton d/d, 4-ton lots.

BORAX, COMMERCIAL.—Crystals, £19 10s. to £20 per ton; granulated, £12 10s. per ton; powder, £14 per ton. (Packed in 1 cwt. bags carriage paid any station in Great Britain.)

CALCIUM CHLORIDE (SOLID).—£5 to £5 5s. per ton d/d carr. paid.

COPPER SULPHATE.—£25 to £25 10s. per ton.

METHYLATED SPIRIT 61 O.P.—Industrial, 1s. 3d. to 1s. 8d. per gall. pyridinised industrial, 1s. 5d. to 1s. 10d. per gall.; mineralised 2s. 4d. to 2s. 8d. per gall.; 64 O.P., 1d. extra in all cases.

NICKEL SULPHATE.—£38 per ton d/d.

NICKEL AMMONIA SULPHATE.—£38 per ton d/d.

POTASH CAUSTIC.—£30 to £33 per ton.

POTASSIUM BICHROMATE.—4½d. per lb.

POTASSIUM CHLORATE.—3⅞d. per lb., ex-wharf, London, in cwt. kegs.

SALAMMONIAC.—£45 to £50 per ton d/d. Chloride of ammonia, £37 to £45 per ton, carr. paid.

SALT CAKE.—£3 15s. to £4 per ton d/d. In bulk.

SODA CAUSTIC, SOLID.—Spot lots delivered, £15 2s. 6d. to £18 per ton, according to strength; 20s. less for contracts.

SODA CRYSTALS.—£5 to £5 5s. per ton, ex railway depots or ports.

SODIUM ACETATE 97/98%.—£21 per ton.

SODIUM BICARBONATE.—£10 10s. per ton, carr. paid.

SODIUM BICHROMATE.—3½d. per lb.

SODIUM BISULPHITE POWDER, 60/62%.—£17 10s. per ton delivered for home market, 1-cwt. drums included; £15 10s. f.o.r. London.

SODIUM CHLORATE.—2¾d. per lb.

SODIUM NITRITE, 100% BASIS.—£27 per ton d/d.

SODIUM PHOSPHATE.—£14 per ton, f.o.b. London, casks free.

SODIUM SULPHATE (GLAUBER SALTS).—£3 12s. 6d. per ton.

SODIUM SULPHIDE CONC. SOLID, 60/65.—£13 5s. per ton d/d. Contract, £13. Carr. paid.

SODIUM SULPHIDE CRYSTALS.—Spot, £8 12s. 6d. per ton d/d. Contract, £8 10s. Carr. paid.

SODIUM SULPHITE, PEA CRYSTALS.—£14 per ton f.o.b. London, 1-cwt. kegs included.

Coal Tar Products

ACID CARBOLIC CRYSTALS.—7d. to 10d. per lb. Crude 60's, 2s. 4½d. to 2s. 6d. per gall.

ACID CRESYLIC 99/100.—2s. 2d. to 2s. 7d. per gall. Pure, 5s. 6d. per gall. 97/99.—2s. 1d. to 2s. 2d. per gall. Pale, 95%, 1s. 9d. to 1s. 10d. per gall. 98%, 2s. 2d. to 2s. 5d. Dark, 1s. 6d. to 2s. 2d. Refined, 2s. 7d. to 2s. 10d. per gall.

ANTHRACENE.—A quality, 2d. to 2½d. per unit. 40%, £4 10s. per ton.

ANTHRACENE OIL, STRAINED, 1080/1090.—4¾d. to 5¼d. per gall. 1100, 5¼d. to 6d. per gall.; 1110, 6d. to 6½d. per gall. Unstrained (Prices only nominal).

BENZOLE.—Prices at works: Crude, 10d. to 11d. per gall.; Standard Motor, 1s. 5d. to 1s. 6d. per gall.; 90%, 1s. 7d. to 1s. 8d. per gall; Pure, 1s. 10d. to 1s. 11d. per gall.

TOLUOLE.—90%, 1s. 9d. to 2s. 1d. per gall. Firm. Pure, 1s. 11d. to 2s. 4d. per gall.

XYLOL.—1s. 5d. to 1s. 10d. per gall. Pure, 1s. 8d. to 2s. 1d. per gall.

CREOSOTE.—Cresylic, 20/24%, 6¾d. to 7d. per gall.; Heavy, 6¼d to 6⅝d. per gall. Middle oil, 4½d. to 5d. per gall. Standard specification, 3d. to 4d. per gall. Light gravity, 2d. to 2¼d. per gall. ex works. Salty, 7¼d. per gall.

NAPHTHA.—Crude, 8¼d. to 8¾d. per gall. Solvent, 90/160, 1s. 3d. to 1s. 3½d. per gall. Solvent, 95/160, 1s. 4d. to 1s. 5d. per gall. Solvent 90/190, 1s. to 1s. 3d. per gall.

NAPHTHALENE, CRUDE.—Drained Creosote Salts, £4 10s. to £5 per ton. Whizzed, £5 per ton. Hot pressed, £8 10s. per ton.

NAPHTHALENE.—Crystals, £12 5s. per ton. Purified Crystals, £14 10s. per ton. Quiet. Flaked, £14 to £15 per ton, according to districts.

PITCH.—Medium soft, 47s. 6d. per ton, f.o.b., according to district. Nominal.

PYRIDINE.—90/140, 3s. 9d. to 4s. per gall. 90/160, 3s. 6d. to 3s. 9d. per gall. 90/180, 1s. 9d. to 2s. 3d. per gall. Heavy, prices only nominal.

Intermediates and Dyes

In the following list of Intermediates delivered prices include packages except where otherwise stated:

ACID AMIDONAPHTHOL DISULPHO (1-8-2-4).—10s. 9d. per lb.

ACID ANTHRANILIC.—6s. per lb. 100%.

ACID BENZOIC.—1s. 8½d. per lb.

ACID GAMMA.—4s. 6d. per lb.

ACID H.—3s. per lb.

ACID NAPHTHIONIC.—1s. 6d. per lb.

ACID NEVILLE AND WINTHER.—4s. 9d. per lb.

ACID SULPHANILIC.—8¼d. per lb.

ANILINE OIL.—8d. per lb. naked at works.

ANILINE SALTS.—8d. per lb. naked at works.

BENZALDEHYDE.—2s. 3d. per lb.

BENZIDINE BASE.—3s. 3d. per lb. 100% basis d/d.

BENZOIC ACID.—1s. 8½d. per lb.

o-CRESOL 29/31° C.—£3 1s. 10d. per cwt., in 1 ton lots.

m-CRESOL 98/100%.—2s. 9d. per lb., in ton lots d/d.

p-CRESOL 32/34° C.—2s. per lb., in ton lots d/d.

DICHLORANILINE.—1s. 10d. per lb.

DIMETHYLANILINE.—1s. 11d. per lb.

DINITROBENZENE.—8d. per lb. naked at works. £75 per ton.

DINITROCHLORBENZENE.—£84 per ton d/d.

DINITROTOLUENE.—48/50° C. 7¼d. per lb. naked at works. 66/68° C, 9d. per lb. naked at works.

DIPHENYLAMINE.—2s. 10d. per lb. d/d.

a-NAPHTHOL.—2s. per lb. d/d.

B-NAPHTHOL.—10d. per lb. d/d.

a-NAPHTHYLAMINE.—1s. 3d. per lb.

B-NAPHTHYLAMINE.—3s. per lb.

o-NITRANILINE.—5s. 9d. per lb.

m-NITRANILINE.—3s. per lb. d/d.

p-NITRANILINE.—1s. 8d. per lb.

NITROBENZENE.—6d. per lb. naked at works

NITRONAPHTHALENE.—1s. 3d. per lb.

R. SALT.—2s. 2d. per lb.

SODIUM NAPHTHIONATE.—1s. 8¼d. per lb. 100% basis d/d.

o-TOLUIDINE.—8d. per lb.

p-TOLUIDINE.—1s. 9d. per lb. naked at works.

m-XYLIDINE ACETATE.—2s. 6d. per lb. 100%.

N. W. ACID.—4s. 9d. per lb. 100%.

Wood Distillation Products

ACETATE OF LIME.—Brown, £9 15s. to £10 5s. per ton. Grey, £16 10s. to £17 10s. per ton. Liquor, 9d. per gall.

ACETONE.—£78 per ton.

CHARCOAL.—£6 to £8 10s. per ton, according to grade and locality.

IRON LIQUOR.—1s. 3d. per gall. 32° Tw. 1s. per gall. 24° Tw.

RED LIQUOR.—9d. to 10½d. per gall. 16° Tw.

WOOD CRESOTE.—1s. 9d. per gall. Unrefined.

WOOD NAPHTHA, MISCIBLE.—3s. 8d. to 3s. 11d. per gall. Solvent, 4s. to 4s. 3d. per gall.

WOOD TAR.—£3 10s. to £4 10s. per ton.

BROWN SUGAR OF LEAD.—£38 per ton.

Rubber Chemicals

ANTIMONY SULPHIDE.—Golden, 6½d. to 1s. 3d. per lb. according to quality; Crimson, 1s. 4d. to 1s. 6d. per lb., according to quality.

ARSENIC SULPHIDE, YELLOW.—1s. 10d. to 2s. per lb.

BARYTES.—£5 10s. to £7 per ton, according to quality.

CADMIUM SULPHIDE.—5s. to 6s. per lb.

CARBON BISULPHIDE.—£25 to £27 10s. per ton, according to quantity

CARBON BLACK.—5¼d. per lb., ex wharf.

CARBON TETRACHLORIDE.—£40 to £50 per ton, according to quantity, drums extra.

CHROMIUM OXIDE, GREEN.—1s. 2d. per lb.

DIPHENYLGUANIDINE.—3s. 9d. per lb.

INDIARUBBER SUBSTITUTES, WHITE AND DARK.—4⅝d. to 5⅞d. per lb.

LAMP BLACK.—£30 per ton, barrels free.

LEAD HYPOSULPHITE.—9d. per lb.

LITHOPONE, 30%.—£20 to £22 per ton.

MINERAL RUBBER "RUBPRON."—£13 12s. 6d. per ton, f.o.r. London

SULPHUR.—£10 to £13 per ton, according to quality.

SULPHUR CHLORIDE.—4d. to 7d. per lb., carboys extra

SULPHUR PRECIP. B. P.—£55 to £60 per ton.

THIOCARBAMIDE.—2s. 6d. to 2s. 9d. per lb., carriage paid.

THIOCARBANILIDE.—2s. 1d. to 2s. 3d. per lb.

VERMILION, PALE OR DEEP.—6s. 6d. to 6s. 9d. per lb.

ZINC SULPHIDE.—8d. to 11d. per lb.

Pharmaceutical and Photographic Chemicals

ACID, ACETIC, PURE, 80%.—£37 per ton ex wharf London, barrels free.

ACID, ACETYL SALICYLIC.—2s. 9d. to 2s. 11d. per lb., according to quantity.

ACID, BENZOIC, B.P.—2s. to 3s. 3d. per lb., according to quantity. Solely ex Gum, 1s. 6d. per oz.; 50-oz. lots, 1s. 3d. per oz.

ACID, BORIC B.P.—Crystal, £32 per ton; powder, £36 per ton; extra fine powder, £38 per ton. Packed in 2-cwt. bags carriage paid any station in Great Britain.

ACID, CAMPHORIC.—19s. to 21s. per lb.

ACID, CITRIC.—2s. to 2s. 0½d. per lb., less 5%.

ACID, GALLIC.—2s. 8d. per lb. for pure crystal, in cwt. lots.

ACID, MOLYBDIC.—5s. 3d. per lb. in ¼ cwt. lots. Packages extra. Special prices for quantities and contracts.

ACID, PYROGALLIC, CRYSTALS.—7s. 3d. per lb. Resublimed, 8s. 3d.

ACID, SALICYLIC, B.P. PULV.—1s. 5d. to 1s. 7d. per lb. Technical.—1s. to 1s. 2d. per lb.

ACID, TANNIC B.P.—2s. 8d. to 2s. 10d. per lb.

ACID, TARTARIC.—1s. 4½d. per lb., less 5%.

ACETANILIDE.—1s. 5d. to 1s. 8d. per lb. for quantities.

AMIDOL.—7s. 6d. to 9s. per lb., d/d.

AMIDOPYRIN.—7s. 9d. to 8s. per lb.

AMMONIUM BENZOATE.—3s. 3d. to 3s. 9d. per lb., according to quantity. 18s. per lb. ex Gum.

AMMONIUM CARBONATE B.P.—£36 per ton. Powder, £39 per ton in 5 cwt. casks. Resublimated, 1s. per lb.

AMMONIUM MOLYBDATE.—4s. 9d. per lb. in ¼ cwt. lots. Packages extra. Special prices for quantities and contracts.

ATROPHINE SULPHATE.—9s. per oz.

BARBITONE —5s. 9d. to 6s. per lb.

BENZONAPHTHOL.—3s. to 3s. 3d. per lb. spot.

BISMUTH CARBONATE.—8s. 9d. per lb.

BISMUTH CITRATE.—8s. 3d. per lb.

BISMUTH SALICYLATE.—8s. 3d. per lb.

BISMUTH SUBNITRATE.—7s. 6d. per lb.

BISMUTH NITRATE.—Cryst. 5s. 3d. per lb.

BISMUTH OXIDE.—11s. 3d. per lb.

BISMUTH SUBCHLORIDE.—10s. 3d. per lb.

BISMUTH SUBGALLATE.—7s. 3d. per lb. Extra and reduced prices for smaller and larger quantities of all bismuth salts respectively.

BISMUTHI ET AMMON LIQUOR.—Cit. B.P. in W. Qts. 1s. 0½d. per lb.; 12 W. Qts. 11½d. per lb.; 36 W Qts. 11d. per lb.

BORAX B.P.—Crystal, £20 per ton; powder, £21 per ton. Packed in 1- or 2-cwt. bags carriage paid any station in Great Britain.

BROMIDES.—Ammonium, 1s. 11½d. per lb.; potassium, 1s. 8½d. per lb.; granular, 1s. 7½d. per lb.; sodium, 1s. 10½d. per lb. Prices for 1 cwt. lots.

CALCIUM LACTATE.—B.P., 1s. 2d. to 1s. 3d per lb., in 1-cwt. lots.

CAMPHOR.—Refined flowers, 3s. 3d. to 3s. 4d. per lb., according to quantity; also special contract prices.

CHLORAL HYDRATE.—3s. 1d. to 3s. 4d. per lb.

CHLOROFORM.—2s. 4½d. to 2s. 7½d. per lb., according to quantity.

CREOSOTE CARBONATE.—6s. per lb.

ETHERS.—S.G. ·730—11d. to 1s. per lb., according to quantity other gravities at proportionate prices.

FORMALDEHYDE, 40%.—37s. per cwt., in barrels, ex wharf.

GUAIACOL CARBONATE.—4s. 6d. to 4s. 9d. per lb.

HEXAMINE.—2s. 3d. to 2s. 6d. per lb.

HOMATROPINE HYDROBROMIDE.—30s. per oz.

HYDRASTINE HYDROCHLORIDE.—English make offered at 120s. per oz.

HYDROGEN PEROXIDE (12 VOLS.).—1s. 4d. per gallon, f.o.r. makers' works, naked. Winchesters, 2s. 11d. per gall. B.P., 10 vols., 2s. to 2s. 3d. per gall.; 20 vols., 4s. per gall.

HYDROQUINONE.—3s. 9d. to 4s. per lb., in cwt. lots.

HYPOPHOSPHITES.—Calcium, 2s. 5d. per lb.; potassium, 2s. 8½d. per lb.; sodium, 2s. 7½d. per lb., in 1 cwt. lots, assorted.

IRON AMMONIUM CITRATE.—B.P., 2s. 8d. to 2s. 11d. per lb. Green, 3s. 1d. to 3s. 4d. per lb. U.S.P., 2s. 9d. to 3s. per lb.

IRON PERCHLORIDE.—18s. to 20s. per cwt., according to quantity.

IRON QUININE CITRATE.—B.P., 8¾d. to 9¼d. per oz., according to quantity.

MAGNESIUM CARBONATE.—Light commercial, £31 per ton net.

MAGNESIUM OXIDE.—Light commercial, £62 10s. per ton, less 2½%; Heavy commercial, £21 per ton, less 2½%; in quantity lower; Heavy Pure, 2s. to 2s. 3d. per lb.

MENTHOL.—A.B.R. recrystallised B.P., 18s. 6d. per lb. net; Synthetic, 9s. 6d. to 11s. per lb.; Synthetic detached crystals 9s. 6d. to 15s. per lb., according to quantity; Liquid (95%), 9s. per lb.

MERCURIALS B.P.—Up to 1 cwt. lots, Red Oxide, crystals, 8s. 4d. to 8s. 5d. per lb., levig., 7s. 10d. to 7s. 11d. per lb.; Corrosive Sublimate, Lump, 6s. 7d. to 6s. 8d. per lb., Powder, 6s. to 6s. 1d. per lb.; White Precipitate, Lump, 6s. 9d. to 6s. 10d. per lb., Powder, 6s. 10d. to 6s. 11d. per lb., Extra Fine, 6s. 11d. to 7s. per lb.; Calomel, 7s. 2d. to 7s. 3d. per lb.; Yellow Oxide, 7s. 8d. to 7s. 9d. per lb.; Persulph, B.P.C., 6s. 11d. to 7s. per lb.; Sulph. nig., 6s. 8d. to 6s. 9d. per lb. Special prices for larger quantities.

METHYL SALICYLATE.—1s. 6d. to 1s. 8d. per lb.

METHYL SULPHONAL.—18s. 6d. to 20s. per lb.

METOL.—9s. to 11s. 6d. per lb. British make.

PARAFORMALDEHYDE.—1s. 9d. per lb. for 100% powder.

PARALDEHYDE.—1s. 4d. per lb.

PHENACETIN.—3s. 2½d. to 3s. 7d. per lb.

PHENAZONE.—5s. 11d. to 6s. 1½d. per lb.

PHENOLPHTHALEIN.—5s. 11d. to 6s. 1½d. per lb.

POTASSIUM BITARTRATE 99/100% (Cream of Tartar).—102s. to 104s. per cwt., less 2½ per cent.

POTASSIUM CITRATE.—B.P.C., 2s. 7d. per lb. in 1 cwt. lots.

POTASSIUM FERRICYANIDE.—1s. 9d. per lb., in cwt. lots.

POTASSIUM IODIDE.—16s. 8d. to 17s. 2d. per lb., according to quantity.

POTASSIUM METABISULPHITE.—6d. per lb., 1-cwt. kegs included f.o.r. London.

POTASSIUM PERMANGANATE.—B.P. crystals, 5½d. per lb., spot.

QUININE SULPHATE.—1s. 8d. to 1s. 9d. per oz., bulk in 100 oz. tins.

RESORCIN.—2s. 10d. to 3s. per lb., spot.

SACCHARIN.—43s. 6d. per lb.

SALOL.—2s. 3d. to 2s. 6d. per lb.

SODIUM BENZOATE, B.P.—1s. 8d. to 1s. 11d. per lb.

SODIUM CITRATE, B.P.C., 1911.—2s. 4d. per lb., B.P.C. 1923—2s. 7d. per lb. Prices for 1 cwt. lots. U.S.P., 2s. 6d. to 2s. 9d. per lb., according to quantity.

SODIUM FERROCYANIDE.—4d. per lb., carriage paid.

SODIUM HYPOSULPHITE, PHOTOGRAPHIC.—£15 per ton, d/d consignee's station in 1-cwt. kegs.

SODIUM NITROPRUSSIDE.—16s. per lb.

SODIUM POTASSIUM TARTRATE (ROCHELLE SALT).—100s. to 105s. per cwt. Crystals, 5s. per cwt. extra.

SODIUM SALICYLATE.—Powder, 2s. 2d. to 2s. 4d. per lb. Crystal, 2s. 3d. to 2s. 5d. per lb.

SODIUM SULPHIDE, PURE RECRYSTALLISED.—10d. to 1s. 1d. per lb.

SODIUM SULPHITE, ANHYDROUS.—£27 10s. to £29 10s. per ton, according to quantity. Delivered U.K.

SULPHONAL.—9s. 6d. to 10s. per lb.

TARTAR EMETIC, B.P.—Crystal or powder, 2s. 1d. to 2s. 3d. per lb.

THYMOL.—Puriss., 9s. 1d. to 9s. 4d. per lb., according to quantity. Firmer. Natural, 12s. per lb.

Perfumery Chemicals

ACETOPHENONE.—7s. per lb.

AUBEPINE (EX ANETHOL).—12s. per lb.

AMYL ACETATE.—2s. 6d. per lb.

AMYL BUTYRATE.—5s. per lb.

AMYL CINNAMIC ALDEHYDE.—15s. per lb.

AMYL SALICYLATE.—2s. 9d. per lb.

ANETHOL (M.P. 21/22° C.).—6s. per lb.

BENZALDEHYDE FREE FROM CHLORINE.—2s. 6d. per lb.

BENZYL ACETATE FROM CHLORINE-FREE BENZYL ALCOHOL.—2s. per lb.

BENZYL ALCOHOL FREE FROM CHLORINE.—2s. per lb.

BENZYL BENZOATE.—2s. 3d. per lb.

CINNAMIC ALDEHYDE NATURAL.—13s. 3d. per lb.

COUMARIN.—8s. 9d. per lb.

CITRONELLOL.—9s. per lb.

CITRAL.—8s. per lb.

ETHYL CINNAMATE.—6s. 6d. per lb.

ETHYL PHTHALATE.—2s. 9d. per lb.

EUGENOL.—11s. 9d. per lb.

GERANIOL (PALMAROSA).—20s. per lb.

GERANIOL.—6s. 6d. to 10s. per lb.

HELIOTROPINE.—7s. per lb.

ISO EUGENOL.—13s. per lb.

LINALOL.—Ex Bois de Rose, 12s. per lb. Ex Shui Oil, 10s. per lb.

LINALYL ACETATE.—Ex Bois de Rose, 15s. per lb. Ex Shui Oil, 12s. per lb.

PHENYL ETHYL ACETATE.—11s. per lb.

PHENYL ETHYL ALCOHOL.—9s. 6d. per lb.

RHODINOL.—50s. per lb.

SAFROL.—2s. 6d. per lb.

TERPINEOL.—1s. 6d. per lb.

VANILLIN, EX CLOVE OIL.—14s. to 15s. per lb. Ex Guaiacol, 13s. to 14s. per lb.

Essential Oils

ALMOND OIL.—Foreign S.P.A., 10s. per lb.

ANISE OIL.—4s. per lb.

BERGAMOT OIL.—14s. 9d. per lb.

BOURBON GERANIUM OIL.—19s. per lb.

CANANGA OIL, JAVA.—11s. 6d. per lb.

CASSIA OIL, 80/85%.—5s. 6d. per lb.

CINNAMON OIL LEAF.—8s. 6d. per oz.

CITRONELLA OIL.—Java, 3s. 6d. per lb., c.i.f. U.K. port.

CLOVE OIL (90/92%).—8s. 3d. per lb.

EUCALYPTUS OIL, AUSTRALIAN, B.P. 70/75%.—1s. 10d. per lb.

LAVENDER OIL.—Mont Blanc, 38/40%, 14s. per lb.

LEMON OIL.—13s. 9d. per lb.

LEMONGRASS OIL.—4s. per lb.

ORANGE OIL, SWEET.—15s. 6d. per lb.

PEPPERMINT OIL.—English, 87s. 6d. per lb.; Wayne County, 15s. 6d. per lb.; Japanese, 5s. per lb.

London Chemical Market

The following notes on the London Chemical Market are specially supplied to THE CHEMICAL AGE *by Messrs. R. W. Greeff & Co., Ltd., and Messrs. Chas. Page & Co., Ltd., and may be accepted as representing these firms' independent and impartial opinions.*

London, November 7, 1929.

STEADY conditions still control this market, fluctuations being within very narrow lines. The improvement in the volume of export trade is maintained.

General Chemicals

ACETONE.—Quite a fair business is passing at the firm rates of £75 to £85 per ton.

ACID ACETIC is unchanged at £36 10s. for 80% technical, with usual extra for edible quality, and there is a fair demand.

ACID CITRIC is somewhat slow of sale, and the price is a little easier at about 2s. 2½d. per lb., less 5%.

ACID LACTIC.—There is a steady demand at £43 per ton for 50% by weight, usual pale quality.

ACID OXALIC.—Rather a larger volume of business has been booked, prices remaining firm at £30 7s. 6d. to £32 per ton, according to quantity.

ACID TARTARIC.—A little more interest is taken in this product, and there is no change in the price at 1s. 4½d. to 1s. 5d. per lb., less 5%.

ALUMINA SULPHATE.—Higher prices are quoted for this product with material for near delivery rather short. Present prices £7 15s. to £8 per ton, for 17/18% quality.

ARSENIC.—There is no improvement in the demand, price continuing steady at £16 17s. 6d., free on rails mines.

BORAX.—Unchanged at £13 per ton.

CREAM OF TARTAR.—Rather more business has been placed, and the product is quoted at £104 to £109 per ton.

COPPER SULPHATE.—The market is firmer, with a brisk demand. Price about £28 per ton, less 5%.

FORMALDEHYDE.—A steady trade is passing at £36 per ton.

LEAD ACETATE.—The market is firm at £44 per ton for white, and £43 per ton for brown, with a steady demand.

LEAD NITRATE.—Unchanged at £33 15s.

LIME ACETATE.—Steady and in fair request.

LITHOPONE.—In rather larger demand at £19 15s. to £23 per ton, according to grade.

METHYL ACETONE.—Steady at £58 10s. per ton, at which figure a fair amount of busines is passing.

POTASSIUM CARBONATE.—Rather more active at £27 per ton, for 96/98%.

POTASSIUM CHLORATE.—The market is receiving a larger volume of business, and the price is firm at £30 per ton.

POTASSIUM PERMANGANATE is unchanged in price at 5½d. to 5¾d. per lb. for the B.P. quality, and there is an active demand.

POTASSIUM PRUSSIATE.—Increased business is being booked, and the market is firm at £63 10s. to £65 10s.

SODIUM ACETATE.—There is a good demand for white crystal quality at £22 to £23 per ton.

SODIUM BICHROMATE.—The market is steady at the unchanged price of 3⅝d. per lb.

SODIUM HYPOSULPHITE. — Photographic quality, £14 10s. to £15 per ton, with commercial quality at £8 10s. to £9 per ton and in fair demand.

SODIUM NITRITE.—Firm at £20 per ton.

SODIUM PHOSPHATE.—Tribasic, £17 10s. per ton, and dibasic £12 per ton, with a steady trade passing.

SODIUM PRUSSIATE.—Firm at 4¾d. to 5¼d., with better demand.

TARTAR EMETIC.—Larger inquiries have been received, and the product is firm at 11½d. per lb.

ZINC SULPHATE.—In active demand at £13 10s. per ton.

Coal Tar Products

The prices of coal tar products in general still remain firm, with a tendency to rise, although very few orders of any size have been placed.

MOTOR BENZOL remains firm at about 1s. 5½d. to 1s. 6d. per gallon, f.o.r. maker's works.

SOLVENT NAPHTHA is unchanged, at about 1s. 2½d. to 1s. 3d. per gallon f.o.r.

HEAVY NAPHTHA is quoted at about 1s. 1d. per gallon, f.o.r.

CREOSOTE OIL remains at about 3½d. to 4d. per gallon, on rails in the North, and at 4¾d. per gallon in London.

NAPHTHALENES remain at about £4 10s. per ton, for the firelighter quality, at £5 per ton for the 74/76 quality, and at £6 to £6 5s. per ton for the 76/78 quality.

PITCH.—The market shows no change, at 47s. 6d. per ton, f.o.r. East Coast Port.

Nitrogen Products

Sulphate of Ammonia.—The demand for sulphate of ammonia continues to be small, except in the Far East, and little business has been transacted. British sellers are still holding for £8 18s. 9d. per ton f.o.b. U.K. port in new single bags, basis 20·6 per cent. nitrogen.

Home.—There are no special features to report.

Nitrate of Soda.—Although shipments continue to be heavy, very few sales have been reported. This is no doubt due to the large sales made for forward delivery, and in view of the large supplies available, the tendency is for buyers to hold off.

Latest Oil Prices

LONDON, November 6.—LINSEED OIL closed easy at 10s. to 20s. decline. Spot, ex mill, £44 10s.; November, £41 5s.; December, £41 2s. 6d.; January-April, £40; May-August, £38 15s., naked. RAPE OIL was slow. Crude, extracted, £43; technical, refined, £44 10s., naked, ex wharf. COTTON OIL was steady. Egyptian, crude, £31; refined common edible, £36; deodorised, £38, naked, ex mill. TURPENTINE was quiet. American, spot, 42s. 9d.; November-December, 43s.; January-April, 44s. per cwt.

HULL.—LINSEED OIL.—Spot, £43 10s.; November and November-December, £43 5s.; January-April, £42 per ton, naked. COTTON OIL.—Egyptian, crude, spot, £31 5s.; November-December, £30 5s.; edible, refined, spot, £35; technical, spot, £34 10s.; deodorised, spot, £37 per ton naked. PALM KERNEL OIL.—Crude, 5½ per cent., spot £32 15s. naked. GROUNDNUT OIL.—Crushed extracted, spot, £36; deodorised, spot, £40 per ton. SOYA OIL.—Extracted and crushed, spot, £33 10s.; deodorised, spot, £37 per ton. RAPE OIL.—Crushed extracted, spot, £41 10s.; refined, spot, £43 10s. per ton. TURPENTINE.—Spot, 45s. per cwt. net, cash terms, ex mill. CASTOR OIL and COD OIL unaltered.

South Wales By-Products

SOUTH WALES by-product activities remain unchanged. Pitch is quiet, only small quantities changing hands on a basis of 49s. to 50s. per ton delivered. Road tar is in slightly better demand, and values have advanced to from 11s. to 14s. per 40-gallon barrel. Solvent and heavy naphthas are inactive, but quotations are unchanged at 1s. 3d. to 1s. 6d. per gallon and 11d. to 1s. 1d. per gallon, respectively. Interest is being shown in sulphate of ammonia, but there is no record of business being done. Creosote is weak, with values unchanged at 3d. to 4¼d. per gallon. Motor benzol has a fair demand at 1s. 3½d. to 1s. 5½d. per gallon. Refined tars continue to have a steady, if moderate, call, both gasworks' and coke oven tar being unchanged in price. Coke and patent fuel exports are slightly better and the immediate outlook is brighter.

Scottish Coal Tar Products

THERE has been very little change in market conditions during the week. Coal tar pitch is still scarce with practically no business passing, and creosote oil is less active than it has been during the last few weeks. Cresylic acid is very scarce in this area.

Cresylic Acid.—Makers of 97/99% grades are not offering for prompt delivery, having sold their total output for several months forward. Values are steady as follows: Pale, 97/99%, 1s. 11½d. to 2s. 0½d.; dark, 97/99%, 1s. 9½d. to 1s. 10½d.; pale, 99/100%, 2s. 2d. to 2s. 4d., all per gallon ex works, in bulk quantities.

Carbolic Sixties.—Price is nominal at 2s. 5d. to 2s. 7d. per gallon.

Creosote Oil.—Fewer orders are passing, but prices remain steady: B.E.S.A. Specification, 4¾d. to 5d. per gallon; gasworks ordinary, 3⅝d. to 3⅞d. per gallon; washed oil, 3¼d. to 3⅜d. per gallon, all rails, makers' works.

Coal Tar Pitch.—There is no change to report. Stocks are low and prices nominal. Coke oven and horizontal, 47s. 6d. f.a.s. Glasgow, vertical 45s. f.a.s. Glasgow.

Blast Furnace Pitch is now controlled, and fixed price remains at 30s. per ton, ex works, for home trade and 35s. per ton f.a.s. Glasgow for export. Merchants are still holding stocks which are available at a shade under quoted prices.

Refined Coal Tar.—Quiet and steady. Price nominal at 3¾d. to 4d. per gallon, ex works. Forward delivery about ⅛d. per gallon extra.

Blast Furnace Tar is quiet. Price unchanged at 2¾d. per gallon, ex works.

Crude Naphtha.—There is no change to report and price remains at about 4¾d. to 5¼d. per gallon, ex works.

Water White Products are quiet. 90/160 solvent naphtha, 1s. 2d. to 1s. 2½d.; heavy solvent, 90/190 1s. 0½d. to 1s. 1d.; benzole, 1s. 5d. to 1s. 5½d. all per gallon, ex works.

Scottish Chemical Market

The following notes on the Scottish Chemical Market are specially supplied to THE CHEMICAL AGE *by Messrs. Charles Tennant and Co., Ltd., Glasgow, and may be accepted as representing the firm's independent and impartial opinions.*

Glasgow, November 6, 1929.

BUSINESS in the heavy chemical market still remains good and the proportion of orders in relation to inquiries received is also satisfactory. Export inquiry has also been well maintained. There are no material changes in prices to record.

Industrial Chemicals

ACETONE, B.G.S.—£76 10s. to £85 per ton, ex wharf, according to quantity. Inquiry remains satisfactory.

ACID ACETIC.—This material is still scarce for immediate supply, but prices remain unchanged as follows: 98/100% glacial, £56 to £67 per ton, according to quality and packing, c.i.f. U.K. ports; 80% pure, £37 10s. per ton, ex wharf; 80% technical, £37 10s. per ton, ex wharf.

ACID BORIC.—Crystals, granulated or small flakes, £30 per ton. Powder, £32 per ton, packed in bags, carriage paid U.K. stations. There are a few fairly cheap offers made from the Continent.

ACID CARBOLIC, ICE CRYSTALS.—Prompt delivery difficult to obtain and prices now quoted for early delivery round about 8d. per lb., delivered or f.o.b. U.K. ports.

ACID CITRIC, B.P. CRYSTALS.—Quoted 2s. 2d. per lb., less 5%, ex store, prompt delivery. Rather cheaper offers for early delivery from the Continent.

ACID HYDROCHLORIC.—Usual steady demand. Arsenical quality, 4s. per carboy; dearsenicated quality, 5s. 6d. per carboy, ex works, full wagon loads.

ACID NITRIC, 80° QUALITY.—£24 10s. per ton, ex station, full truck loads.

ACID OXALIC, 98/100%.—On offer at about 3¼d. per lb., ex store. Offered from the Continent at 3⅛d. per lb., ex wharf.

ACID SULPHURIC.—£2 15s. per ton ex works for 144° quality; £5 15s. per ton for 168°. Dearsenicated quality, 20s. per ton extra.

ACID TARTARIC, B.P. CRYSTALS.—Quoted 1s. 5d. per lb., less 5%, ex wharf. On offer for prompt delivery from the Continent at 1s. 4½d. per lb., less 5%, ex wharf.

ALUMINA SULPHATE.—Quoted at round about £7 10s. per ton, ex store.

ALUM, LUMP POTASH.—Now quoted £8 7s. 6d. per ton, c.i.f. U.K. ports. Crystal meal about 2s. 6d. per ton less.

AMMONIA, ANHYDROUS.—Quoted 7½d. per lb., carriage paid. Containers extra and returnable.

AMMONIA CARBONATE.—Lump quality quoted £36 per ton, powdered £38 per ton, packed in 5 cwt. casks, delivered U.K. stations or f.o.b. U.K. ports.

AMMONIA LIQUID, 880°.—Unchanged at about 2½d. to 3d. per lb., delivered according to quantity.

AMMONIA MURIATE.—Grey galvanisers' crystals of British manufacture quoted £21 to £22 per ton, ex station. Fine white crystals offered from the Continent at about £17 5s. per ton, c.i.f. U.K. ports.

ANTIMONY OXIDE.—Spot material quoted £37 per ton, ex wharf. On offer for prompt shipment from China at £34 per ton, c.i.f. U.K. ports.

ARSENIC, WHITE POWDERED.—Now quoted £18 per ton, ex wharf, prompt despatch from mines. Spot material still on offer at £19 15s. per ton, ex store.

BARIUM CHLORIDE.—In good demand and price about £11 per ton, c.i.f. U.K. ports.

BLEACHING POWDER.—British manufacturers' contract price to consumers unchanged at £6 12s. 6d. per ton, delivered in minimum 4-ton lots. Continental now offered at about the same figure.

CALCIUM CHLORIDE.—Remains unchanged. British manufacturers' price £4 5s. per ton to £4 15s. per ton, according to quantity and point of delivery. Continental material on offer at £3 12s. 6d. per ton, c.i.f. U.K. ports.

COPPERAS, GREEN.—Unchanged at about £3 10s. per ton, f.o.r. works, or £4 12s. 6d. per ton f.o.b. U.K. ports.

FORMALDEHYDE, 40%.—Remains steady at about £36 10s. per ton, ex works.

GLAUBER SALTS.—English material quoted £4 10s. per ton, ex station. Continental on offer at about £3 5s. per ton, ex wharf.

LEAD, RED.—Price now £37 10s. per ton, delivered buyers' works.

LEAD, WHITE.—Quoted £37 10s. per ton, c.i.f. U.K. ports.

LEAD ACETATE.—White crystals quoted round about £39 to £40 per ton, ex wharf. Brown on offer at about £2 per ton less.

MAGNESITE, GROUND CALCINED.—Quoted £8 10s. per ton, ex store. In moderate demand.

METHYLATED SPIRIT.—Industrial quality 64 O.P. quoted 1s. 4d. per gallon, less 2½%, delivered.

POTASSIUM BICHROMATE.—Quoted 4⅝d. per lb. delivered U.K. or c.i.f. Irish ports, with an allowance of 2½% for minimum 2½ tons to be taken.

POTASSIUM CARBONATE.—Spot material on offer at £26 10s. per ton ex store. Offered from the Continent at £25 5s. per ton c.i.f. U.K. ports.

POTASSIUM CHLORATE, 99¾/100% POWDER.—Quoted £25 10s. per ton ex wharf. Crystals 30s. per ton extra.

POTASSIUM NITRATE.—Refined granulated quality quoted £19 2s. 6d. per ton c.i.f. U.K. ports. Spot material on offer at about £20 10s. per ton, ex store.

POTASSIUM PERMANGANATE B.P. CRYSTALS.—Quoted 5¼d. per lb., ex wharf.

POTASSIUM PRUSSIATE (YELLOW).—Spot material quoted 7d. per lb., ex store. Offered for prompt delivery from the Continent at about 6¾d. per lb. ex wharf.

SODA, CAUSTIC.—Powdered 98/99% £17 10s. per ton in drums, £18 15s. per ton in casks. Solid 76/77% £14 10s. per ton in drums, and £14 12s. 6d. per ton for 70/75% in drums, all carriage paid buyers' stations, minimum 4-ton lots, for contracts 10s. per ton less.

SODIUM BICARBONATE.—Refined recrystallised £10 10s. per ton, ex quay or station. M.W. quality 30s. per ton less.

SODIUM BICHROMATE.—Quoted 3⅝d. per lb. delivered buyers' premises with concession for contracts.

SODIUM CARBONATE (SODA CRYSTALS).—£5 to £5 5s. per ton, ex quay or station. Powdered or Pea quality 27s. 6d. per ton extra. Light soda ash £7 1s. 3d. per ton ex quay, minimum 4-ton lots with various reductions for contracts.

SODIUM HYPOSULPHITE.—Large crystals of English manufacture quoted £8 17s. 6d. per ton, ex station, minimum 4-ton lots. Pea crystals on offer at £14 15s. per ton, ex station, minimum 4-ton lots. Prices for this year unchanged.

SODIUM NITRATE.—Chilean producers are now offering at £9 9s. per ton, carriage paid buyers' sidings, minimum 6-ton lots, but demand in the meantime is small.

SODIUM PRUSSIATE.—Quoted 5¼d. per lb., ex store. On offer at 5d. per lb., ex wharf to come forward.

SODIUM SULPHATE (SALTCAKE).—Prices 50s. per ton, ex works, 52s. 6d. per ton, delivered for unground quality. Ground quality 2s. 6d. per ton extra.

SODIUM SULPHIDE.—Prices for home consumption. Solid 60/62% £9 per ton. Broken 60/63% £10 per ton. Crystals 30/32% £7 2s. 6d. per ton delivered buyers' works on contract, minimum 4-ton lots. Special prices for some consumers. Spot material 5s. per ton extra.

SULPHUR.—Flowers, £12 per ton; roll, £10 10s. per ton: rock, £10 7s. 6d. per ton; ground American, £9 5s. per ton; ex store.

ZINC CHLORIDE, 98%.—British material now offered at round about £20 per ton, f.o.b. U.K. ports.

ZINC SULPHATE.—Quoted £10 per ton, ex wharf.

NOTE.—Please note that the above prices are for bulk business and are not to be taken as applicable to small parcels.

British Industries Fair Improvements

A STEP towards improving the appearance of stands in the British Industries Fair was taken by the London exhibitors' advisory committee on Monday, when it was agreed that, except by special permission, all stands at Olympia made of stock material should have fascias three feet deep on pilasters eight feet high. It was stated that there was no intention of interfering with stands owned by exhibitors or those of a distinctive type or design, but that much could be done towards uniformity by avoiding the unnecessary irregularities of ordinary stands.

Some idea of the convenience of the London section's new premises from the buyer's point of view may be gathered from the fact that the distance which a buyer at Olympia will have to walk to the least accessible stand from the nearest entrance will be only 130 yards, as compared with half-a-mile at the White City. The distance between the two sections which are farthest apart will be 100 yards, as compared with a mile at the White City.

There will be four main entrances—one in Addison Road, two in Hammersmith Road, and one in Blythe Road. The whole of the Fair will be on two floors. The Fair will be held simultaneously in London and Birmingham from February 17 to 28, 1930.

Manchester Chemical Market

(From Our Own Correspondent.)

Manchester, November 7, 1929.

There has been little appreciable improvement in the actual weight of business in chemical products on this market compared with recent weeks, although, on the whole, a not unsatisfactory trade is being put through, with a fair sprinkling of inquiries this week, which have related in the main to near delivery position. Bichromate interests have now announced their decision to maintain the July-December price basis for potash and soda over next year.

Heavy Chemicals

A quiet trade has been passing in chlorate of soda, with current quotations at from 2½d. to 2¾d. per lb. Prussiate of soda retains its firmness at from 4¾d. to 5¼d. per lb., according to quantity, and a fairly satisfactory business is being done. Sulphide of sodium is in quiet request, with values steady at from £9 5s. to £9 10s. per ton for the 60/65 per cent. concentrated solid quality and about £8 for the commercial grade. Saltcake is fully maintained and meets with a moderate volume of inquiry at about £3 per ton. Buying interest in the case of caustic soda keeps up and prices are firm at from £12 15s. to £14 per ton, according to quality, and in contracts. With regard to hyposulphite of soda, this material meets with a quiet demand at round £15 10s. per ton for the photographic quality and £9 5s. for the commercial. Bichromate of soda is very steady on the basis of 3⅜d. per lb. and sales are pretty steady. Current offers of phosphate of soda are in the neighbourhood of £11 5s. per ton for the dibasic material. A steady trade is reported in the case of alkali and values are quite firm at about £6 per ton, with bicarbonate of soda also moving in fair quantities on a contract basis of £10 10s. per ton.

There is a moderate volume of inquiry in circulation in respect of caustic potash, quotations for which keep fairly steady at about £32 10s. per ton. Permanganate of potash has been in rather quiet demand during the past week, but offers are maintained at 5½d. per lb. for the B.P. grade and round 5¼d. for the commercial. Bichromate of potash has come in for a fair amount of interest from buyers and values are firm on the basis of 4¾d. per lb. Yellow prussiate of potash is a moderately active section of the market and there has been no change in the price position, the range remaining at from 6¾d. to 7¼d. per lb., according to quantity. There is a quiet demand about for carbonate of potash and quotations are reasonably steady at about £25 5s. per ton for the 96/98 per cent. material. Sales of chlorate of potash this week have been on the slow side at 2⅞d. per lb.

Arsenic keeps fairly steady, although the demand on this market is somewhat restricted, white powdered, Cornish makes, being quoted at up to £16 5s. per ton at the mines. Inquiry in the case of sulphate of copper is of moderate extent with offers maintained at from £26 10s. to £27 per ton, f.o.b. Nitrate of lead is slow at an average price of about £33 10s. per ton. The acetates of lead show little change on the week, brown being obtainable at a top figure of £39 per ton and white at £40. The acetates of lime meet with a quiet demand at round £16 10s. per ton for the grey quality and £8 for the brown.

Acids and Tar Products

Tartaric acid is not particularly active at the moment, but prices are about held at from 1s. 4¼d. to 1s. 4½d. per lb. Down to 2s. per lb. is being quoted for citric acid, without attracting any important volume of business. Oxalic acid is steady at about £1 13s. per cwt., ex store, and a moderate demand has been reported. Acetic acid is in fairly steady request and prices are firm at £66 per ton for the glacial and £36 for the 80 per cent. commercial.

Pitch quotations are maintained on the basis of 47s. 6d. per ton, f.o.b., with current demand on moderate lines. A quiet business is going through in creosote oil for both branches of trade and offers are steady at from 4d. to 4¼d. per gallon, at works. Crude carbolic acid is firm at about 2s. 5d. per gallon, naked, for 60's, and good prices continue to be obtained for the relatively small quantities of crystals at present on offer. Solvent naphtha is in moderate demand at an average price of about 1s. 2½d. per gallon.

Company News

Explosives and Chemical Products.—A dividend of 16⅔ per cent., free of tax, has been declared on the ordinary shares.

Newton Chambers and Co.—An interin dividend of 2½ per cent., actual, free of tax, is announced on both the ordinary and the preference shares.

Buell Combustion Co.—A loss of £10,431 is shown by the second report covering the year to June 30 last, which raises the total debit balance to £15,154.

Allen-Liversidge.—A dividend at the rate of 6½ per cent. per annum, less tax, is announced for the six months ended October 31, 1929, on the preference shares.

Anglo-French Phosphate.—A net profit for 1928 of £31,742 is reported. A dividend of 12 per cent., plus a bonus of 2 per cent., is proposed; £10,000 is added to reserve, and £4,393 carried forward.

British Match Corporation, Ltd.—A dividend has been declared at the rate of 5½ per cent., per annum, less tax, on the preference shares for the half year to October 31, 1929, and an interim dividend of 2 per cent. (actual), on the ordinary shares, free of income tax.

Aguas Blancas Nitrate Co. (1928).—The accounts for the period from April 23, 1928, to June 30, 1929, show a profit of £14,103, but after charging expenses of reopening the oficina Eugenia, £58,038, and London office expenses, £4,534, there is a debit balance of £48,379.

Olympic Portland Cement Co.—Owing to increased competition, unsettled markets, and the uncertain effect of existing disturbed financial conditions of the building trades and road making on the North Pacific Coast, the directors have decided against paying an interim dividend.

Wall Paper Manufacturers, Ltd.—The profit for the year ended August 31 last is £794,198, as compared with £752,900 last year. It is proposed to pay a final dividend of 5 per cent. on the ordinary shares, again making 10 per cent. for the year, and a final dividend of 10 per cent. on the deferred shares, making 15 per cent. for the year, also the same as last year. To various staff and employees' pension funds is again allocated £50,000, and £150,000 is set aside in reduction of goodwill, patents, processes, and trade marks, the carry forward being £295,796, against £302,177.

Burt, Boulton and Haywood.—The net profit for the year ended June 30, 1929, after writing off various items, amounts to £70,326 (against £55,868), to which is added £8,389 brought forward, making £78,714. The sum of £37,142 has been appropriated for payment of preference dividend, interim dividend and distribution of workers' certificates, leaving £41,572. The directors recommend a final dividend of 5 per cent., less income tax, on the ordinary shares, making, with interim dividend of 5 per cent. already paid, a total of 10 per cent. (as last year), less income-tax, for the year, and a final distribution on the workers' certificates of £640, carrying forward £14,956.

Lautaro Nitrate Co.—The gross profits obtained from the sales of nitrate, iodine, etc., for the past twelve months amounted to £963,772. Deducting £315,765 for general expenses, expenses shutting down, interest, commissions and taxes, £166,996 for depreciation of plant and grounds, £50,673 for depreciation of equipment, etc., and £135,487 for the liquidation of the balance of the account Cia. Sal. Blanco Encalada, and Lautaro's participation in Sociedad de Patentes para Elaborar Salitre Ltda. (Invention Bantheim) and law suit about taxes in Comuna Caracoles and other investments, there is a net profit of £294,852, which, with the balance of profit at June 30, 1928, of £748,504, makes a total of £1,043,356. The two dividends declared by special resolution absorb £393,600, leaving £649,756, which the directors propose to carry forward.

Two Chemists Injured

Mr. Harry Howarth, of Cromwell Road, Derby, a chemist employed at the paint and varnish works of the Derby Co-operative Wholesale Society, was burned when some boiling varnish with which he was working caught fire. He was detained in the Derbyshire Royal Infirmary. The head chemist, Mr. W. A. Allsebrook, of Derby, who went to Mr. Howarth's assistance, had his hands burned.

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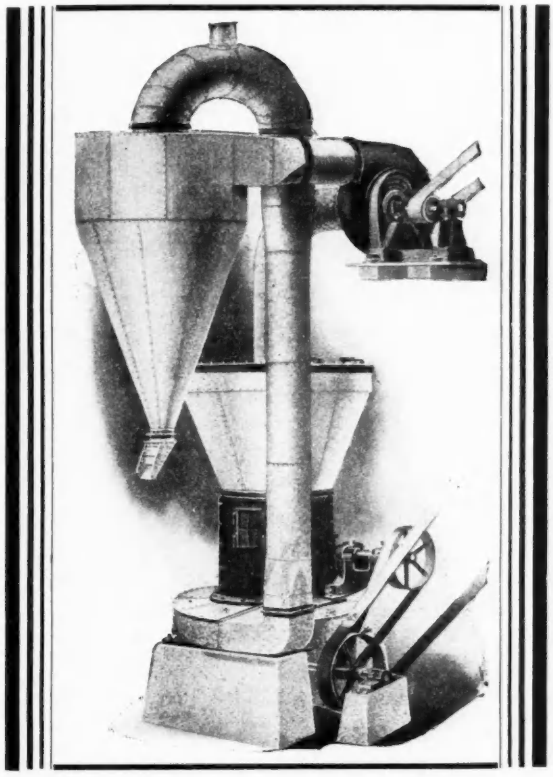

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Company Amalgamation

Newton Chambers and Silkstone Coal and Coke Co.

MENTION was made before Sir Lewis Coward, K.C., in the Railway and Canal Commission, on Tuesday, of the proposed amalgamation of Newton Chambers and Co., Ltd., of Thorncliffe Iron Works, near Sheffield, and the Hoyland Silkstone Coal and Coke Co., Ltd., of Hoyland, near Barnsley.

Mr. Lloyd Jenkins said that the scheme, which it was proposed to ask the Court to sanction, would be for the winding-up of the Hoyland company and the transfer of the whole of its undertaking to Newton Chambers and Co., who held nearly the whole of the capital. Meetings of the shareholders of the two companies had been held to consider the scheme, and in both cases it was approved unanimously.

Sir Lewis Coward directed that notices concerning the scheme should be sent to persons who might be affected by the amalgamation, and that it should be advertised in the Press, so that any objections to it could be put forward, and the Court could then decide who should be allowed to appear when the application for the Commissioners' approval was heard.

Counsel said that it was hoped to get the scheme sanctioned by the Court before Christmas.

Sir Lewis said he noticed that Newton Chambers and Co. had no fewer than seven directors, and the Hoyland company as many as five. He hoped that they would consider a drastic cutting down of the number.

Mr. Jenkins: The directors of the Hoyland company will go out of office, because their business comes to an end. I do not think it is proposed to make any change in the other company, because that is a very large concern. However, they will consider it.

Sir Lewis: The Court will look very gravely on the number of directors that are proposed in these amalgamations, because we think the numbers are often wholly unnecessary.

Low Temperature Carbonisation

Possibility of Electrical Developments

A MEETING of members of the Institute of Fuel will be held jointly with the Institution of Electrical Engineers in the lecture theatre of the latter, Savoy Place, Victoria Embankment, London, W.C.2, on Thursday, November 21, at 5.30 p.m., when three papers will be presented, in abstract only, all dealing with "Low Temperature Carbonisation in Connection with the Production of Electricity." The authors who will give an account of the experience and practice in different countries are as follows:—E. H. Smythe and E. G. Weeks (Great Britain); S. McEwen (United States of America); and Professor R. Rosin (Germany). The chair will be taken by Sir Thomas Purves, president of the Institution of Electrical Engineers. Advance copies of the papers can be obtained on application to the secretary of the Institute of Fuel on or after November 11. Friends of members are cordially invited to attend the meeting and to take part in the discussion.

The next meeting of members of the Institute of Fuel will be held in the lecture theatre at University College, Nottingham (by kind permission of the university authorities), on Friday, November 15, when a paper will be presented entitled "Coals and Their Impurities," by Dr. J. W. Whitaker, and will be open for discussion by members and their friends. The chair will be taken at 7 p.m. by H. Eustace Mitton, president of the Institution of Mining Engineers. Advance copies of the paper will not be available before the meeting.

Chemical Trade Inquiries

The following inquiries, abstracted from the "Board of Trade Journal," have been received at the Department of Overseas Trade (Development and Intelligence), 35, Old Queen Street, London, S.W.1. British firms may obtain the names and addresses of the inquirers by applying to the Department (quoting the reference number and country), except where otherwise stated.

TAR.—A firm of commission agents established in Salonika desire to obtain, for the Salonika area of Greece, the representation of British exporters. (Reference No. 516.)

Commercial Intelligence

The following are taken from printed reports, but we cannot be responsible for any errors that may occur.

Mortgages and Charges

*[NOTE.—The Companies Consolidation Act of 1908 provides that every Mortgage or Charge, as described therein, shall be registered within 21 days after its creation, otherwise it shall be void against the liquidator and any creditor. The Act also provides that every Company shall, in making its Annual Summary, specify the total amount of debts due from the Company in respect of all Mortgages or Charges. The following Mortgages and Charges have been so registered. In each case, the total debt, as specified in the last available Annual Summary, is also given—marked with an *—followed by the date of the Summary, but such total may have been reduced.]*

DE ST. DALMAS (A). AND CO., LTD., Leicester, manufacturing chemists. (M., 9/11/29.) Registered, October 25, mortgage to Midland Bank, Ltd., securing all moneys due or to become due to the Bank; charged on properties in Leicester. *Nil. July 31, 1928.

OIL ALLIANCE, LTD., London, E.C.—(M., 9/11/29.) Registered, October 28, £20,000 charge, to Sir H. P. Shepherd, Leadenhall Buildings, E.C.; charged on properties at Southampton, etc. *Nil. December 31, 1928.

London Gazette, &c.

Partnership Dissolved

JAVELINE PRODUCTS CO. (Joseph Haslam BALSHAW and John Edward MACDONALD), washing compound manufacturers, 131, Great Bridgewater Street, Manchester, by mutual consent as from October 25, 1929. Debts received and paid by J. E. MacDonald, who will continue the business.

E. W. T. JONES AND SON (Ernest Victor JONES and Alfred Edward JOHNSON), analytical chemists, 10, Victoria Street, Wolverhampton, by mutual consent as from October 26, 1929. Debts received and paid by A. E. Johnson.

New Companies Registered

HOLT CHROMIUM PLATING CO., LTD.—Registered October 31. Nominal capital, £1,000 in £1 shares. Chromium platers and depositors, japanners, galvanisers, etc. Directors: M. J. Sandbrook, 42, Brewery Street, Handsworth, Birmingham; F. W. Bell.

THE INTERNATIONAL SOCIETY OF APPLIED SCIENCE, LTD., 59, Gracechurch Street, London E.C.3. Registered as a "private" company on October 31. Nominal capital, £25,000 in 80,000 preferred participating shares of 5s. each and 100,000 founders' shares of 1s. each. To carry on any form of scientific or other research, investigation, manufacture, manipulation or experiment, to engage in any business in which any scientific, commercial or other process, invention or device is capable of being utilised, etc. Directors: E. C. Powell, chemical manufacturer; E. H. R. del Strother.

Two New Paint Specifications

Issued by British Standards Association

REFERENCE has been made from time to time to the series of 61 British standard specifications for paints, varnishes, and paint ingredients issued by the British Engineering Standards Association, and to the fact that the publication of four further specifications together with a British standard schedule of colours for ready mixed paints would complete the present programme of such work undertaken by that Association.

Of these four remaining publications, one has recently been issued, namely B.S.S. for Turpentine Type 2, and announcement is now made of the publication this week of two more, as follows: B.S.S. No. 370—1929, Venetian Red for Paints; B.S.S. No. 371—1228, Ready Mixed Linseed Oil Paint (Oil Gloss) Purple Brown Oxide of Iron.

These specifications follow the lines of those previously issued, and contain clauses regulating the composition, together with standard reception tests for the purchase of these materials; appendices are also incorporated outlining standard methods for carrying out the tests. Copies may be obtained from the British Engineering Standards Association, Publication Department, 28, Victoria Street, London, S.W.1, price 2s. 2d. each, post free.